

**TEAM FACTORS IN YOUTH SPORT PARTICIPATION:
THE ROLE OF COHESION, NORMS, AND SOCIAL SUPPORT**

A Thesis Submitted to the
College of Graduate Studies and Research
in Partial Fulfillment of the Requirements
for the Degree of Doctorate of Philosophy
in the College of Kinesiology
University of Saskatchewan
Saskatoon

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ABSTRACT

There is a dearth of literature examining how the cohesiveness of the team may be connected to individual athlete participation in youth sport settings. Although results from studies conducted with adult athletes (Carron, Widmeyer, & Brawley, 1988; Prapavessis & Carron, 1997a; Spink, 1995) suggest a positive link between perceptions of team cohesion and individual participation, this relationship has not been established with adolescent athletes. The purposes of the studies in this dissertation were: (1) to examine the relationship between cohesion and participation in a youth sport sample; (2) to examine if task cohesion moderated the relationship between perceptions of teammates' effort levels (descriptive norms) and a participation-related outcome (effort); (3) to experimentally test the combined influence of cohesion and descriptive norms on individual self-reported effort; and (4) to explore the plausibility of teammate support as one possible mediator of the cohesion-participation relationship. A multivariate approach was used in Study 1 to both establish the initial relationship between cohesion and individual participation as well as inform subsequent studies in this dissertation by identifying which specific cohesion factors (task, social) and participation-related outcomes (effort, attendance, intention to return to the team) were most strongly related. Multivariate results revealed that task cohesion was associated with two participation outcomes – effort and intention to return to the team. Examining if perceptions of cohesion would qualify the link between perceptions about how hard teammates were working and individual athletes' self-reported effort levels was the purpose of Study 2. Both constructs emerged as positive, significant correlates of effort. As a follow up, a between-subjects experimental design with vignettes was used in Study 3 to test the combined effects of cohesion and descriptive norms about teammate effort on individual self-reported effort levels. Building upon Study 2's correlational findings, cohesion and descriptive norms both had an independent, positive influence on how hard players rated that they would work. The purpose of Study 4 was to consider one possible reason why team cohesion may be associated with individual participation - social support. To examine the proposition that social support may mediate the relationship between cohesion and participation, a prospective design was used in Study 4 to test the links between early-season cohesion, late-season perceptions of social support, and two participation-related outcomes (effort, intention to return to the team in the future). Results supported the plausibility of social support as a partial mediator for both outcomes. Taken together, these four studies provided initial evidence for the potential link

between team cohesion and individual participation in youth sport. Additionally, the emergence of two other team-related constructs, descriptive norms and social support, suggests that these forms of teammate influence also may be associated with youth sport athletes' participation on their team.

ACKNOWLEDGEMENTS

Saying “it takes a village” is not an overstatement in describing the process of completing a PhD. There are a number of people who have either directly or indirectly contributed to my PhD journey, and to whom I must extend thanks.

First, I am indebted to my supervisor, Dr. Kevin Spink, for welcoming me back into academia with open arms. His passion and integrity as a researcher, and the commitment he shows to his graduate students, are unparalleled. I am certain that our many ‘lengthy’ meetings (involving everything from philosophical introspection to one-on-one counseling) have pushed me to be a better researcher, teacher, thinker, and story-teller. Thank you for keeping me on track and helping me see this project through to the end. I have thoroughly enjoyed working with you and feel privileged to be a member of your academic family!

Many thanks also go to the members of my PhD Committee for their guidance and valuable feedback. To Dr. Larry Brawley and Dr. Nancy Gyurcsik, thank you both for your continued dedication to providing exceptional graduate student training. I sincerely appreciate your challenging questions and insights, and your ongoing support of my research and my development as a scholar. To Dr. Laurie Hellsten, thank you for bringing enthusiasm and positivity to your role as Cognate Member, and for reading my document through a slightly different lens. That perspective was invaluable. To Dr. Alan Smith, thank you for your willingness to serve as External Examiner. I believe that your comments and constructive criticism have made the document stronger.

I also am extremely appreciative of the financial assistance I received during my PhD program to make this research possible. Thank you to the Social Science and Humanities Research Council of Canada (SSHRC), Sport Canada, the University of Saskatchewan, and the College of Kinesiology.

Thank you to the many graduate students and academic colleagues, both near and far, who have played a supportive role in my academic journey. In particular, I am grateful to my lab mates (Carly, Alyson, Colin, Kayla) for providing such a stimulating, collaborative, fun, and ‘groupy’ environment to learn and grow as a researcher.

My parents, Ron and Lorna Watson, deserve enormous thanks for their unwavering support of my academic pursuits. Among many things, they taught me the value of hard work and persistence, two things that were particularly helpful during the more challenging stages of

this degree! Mom and Dad, I am blessed to be your daughter and to have you both in my corner.

Finally, I need to convey immense gratitude to my husband, Bradie. Without his unconditional love, encouragement, many sacrifices, and endless patience throughout this journey, none of this would have been possible. Bradie, I am incredibly lucky to have you as my teammate in life!

DEDICATION

This dissertation is dedicated to my daughters, Jessa and Emily. Their journeys in sport are just beginning and I looking forward to standing on the sidelines (or behind the bench) as their most enthusiastic cheerleader.

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CHAPTER 1

GENERAL INTRODUCTION

Sport touches the lives of many Canadian youth. Playing sport offers a variety of potential benefits crossing multiple domains including physical, psychological, cognitive/academic, and social (e.g., Ewing, Gano-Overway, Branta, & Seefeldt, 2002; Malina & Cumming, 2003; Merkel, 2013). As well, those who are involved and work hard in sport are more likely to meet national physical activity guidelines to achieve health benefits (Active Healthy Kids Canada, 2013).

Despite these positive outcomes, sport participation rates among Canadian adolescents are on the decline (Canadian Heritage, 2013; Hurst, 2009). Understanding the factors associated with the motivation to stay involved in youth sport is of paramount importance (Gould, 2007). In addition to benefits noted above and the negative health implications associated with being physically inactive (Patrick et al., 2004), these years also represent a critical time for shaping future sport and physical activity behaviours (Perkins et al., 2004).

However, fully understanding participation in sport goes beyond simply considering whether or not athletes will show up. Another important facet of participation concerns what athletes do when they are present. One factor that has gained the interest of researchers and coaches alike is player effort (Robinson, 2014; Spink, Crozier, & Robinson, 2013). The effort expended by players while participating in sport is important because it has implications for a number of individual (e.g., performance; Sarrazin, Roberts, Cury, Biddle, & Famose, 2002) and team (e.g., win/loss; Giacobbi, Roper, Whitney, & Butryn, 2002) outcomes. Thus, a more complete explanation of player participation also involves understanding what factors may be related to athletes' effort.

1.1 Social Influence in Sport

Social influence refers to “the processes whereby people directly or indirectly influence the thoughts, feelings, and actions of others” (Turner, 1991, p. 1). Not surprisingly, social influence factors have emerged in relation to young athletes' sport participation (Gill, Gross, & Huddleston, 1983; Leversen, Danielsen, Wold, & Samdal, 2012). Sport is played in a highly social context wherein athletes frequently interact with other people, including teammates. Given these interactions, it follows that these significant others may influence, both directly and indirectly, how a young athlete thinks, feels, and acts.

1.2 Team Cohesion

In terms of understanding how social influence may impact individual participation, examining whether young athletes perceive their team to be united (i.e., cohesion) would appear worthwhile. Cohesion has been identified as one of the most examined social influence constructs in the physical activity area (Courneya & McAuley, 1995). While cohesion has been a prominent topic among sport researchers and practitioners for decades, it has only been given focused attention in youth sport settings in recent years. Cohesion is defined as “a dynamic process that is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). Implied within Carron et al.’s (1998) definition is the idea of group maintenance.

Considering the implied conceptual link between team cohesion and individual participation, it is not surprising that empirical research has supported a positive relationship between cohesion and a number of individual participation-related outcomes. In terms of athlete behaviours, cohesion has been positively associated with attendance at practices and games (Carron et al., 1988, Study 1), punctuality (Carron et al., 1988, Study 2), and effort (Prapavessis & Carron, 1997a). As well, cohesion has been linked with athletes’ intention to return (Spink, 1995) as well as actual return to a team (Spink, Wilson, & Odnokon, 2010). What is noteworthy, however, is that all of these studies have been conducted with adult samples. No research has explored how adolescents’ perceptions of team cohesiveness may be related to these important participation outcomes.

1.3 Team Norms

Another potential way that social influences within the team may be associated with individual participation involves team norms. Norms represent the “standards for behaviour that are expected of group members” (Carron & Hausenblas, 1998, p. 173). Teams do not establish norms around all behaviours, but rather, will create norms around the things that are most important to the group (Colman & Carron, 2001). Considering that maintaining status as a “team” entails the sustained involvement of individual members, it may not be surprising that many of the behaviours that are normative to sport teams tend to reflect team members’ participation with the team, such as punctuality, attendance, and individual effort (Munroe, Estabrooks, Dennis, & Carron, 1999).

1.3.1 Descriptive Norms

Descriptive norms reflect perceptions about others' actual behaviour (i.e., how team members act; Cialdini, Reno, & Kallgren, 1990). Emerging evidence in the activity area broadly, as well as sport specifically, suggests that descriptive norms may hold promise in terms of gaining a better understanding of youth sport participation. In activity, Priebe and Spink (2011) reported that descriptive norm perceptions about friends' physical activity levels were positively associated with one's own activity. As well, a recent study in the youth sport setting examining the relationship between descriptive norms and sport behaviour (Spink, Crozier, & Robinson, 2013) found that athletes' perceptions of how hard teammates were working were positively related to their own effort levels. Outside of these findings from activity and sport, studies targeting other adolescent behaviours (e.g., substance use; Elek, Miller-Day, & Hecht, 2006) have revealed similar results, further suggesting that perceptions about peers' behaviour are related to individual behaviour.

1.4 Social Support

Social support is another form of social influence that may be relevant within sport teams (Rosenfeld & Richman, 1997). Although relatively little work has been done to understand this construct within sport teams, social support has been widely examined in the social psychology and health areas since the 1970's. Although much of the research on social support has focused on its stress-buffering role in times of adversity, Feeney and Collins (2014) recently proposed that supportive relationships also may promote individual engagement in and persistence with positive life opportunities, such as sport.

Many conceptualizations of social support have been proposed within the literature. One definition that has been accepted by sport researchers describes social support as "an exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the well-being of the recipient" (Shumaker & Brownell, 1984, p. 13). One important distinction worth highlighting from Shumaker and Brownell's (1984) definition relates to the focus on individual perceptions about the availability of support (perceived support). Research indicates that perceived support is more consistently related to positive individual outcomes than received support (Freeman & Rees, 2010). For example, perceptions of teammate support have been positively associated with a number of important individual outcomes, including intrinsic

motivation (DeFreese & Smith, 2013), satisfaction (Chen, 2013), and commitment to stay in sport (Santi, Bruton, Pietrantonio, & Mellalieu, 2014).

Although not explicit within Shumaker and Brownell's (1984) definition, a number of social support theorists consider social support to be comprised of various functional elements (e.g., emotional support, tangible aid, informational advice, etc.) rather than viewed as a unidimensional construct (e.g., Cohen & Syme, 1985; Weiss, 1974). The concomitant challenge for those who study social support as a multidimensional construct, however, is navigating the diversity surrounding how many and what specific dimensions best capture this construct (Wills & Shinar, 2000).

1.4.1 Model of Social Provisions

Among the many conceptualizations of social support, one model that has demonstrated utility in youth activity and sport settings is R. S. Weiss's (1974) Model of Social Provisions (e.g., DeFreese & Smith, 2013; Motl, Dishman, Saunders, Dowda, & Pate, 2004). This conceptual model describes six interrelated social support dimensions, referred to as social provisions. These provisions include *attachment* (feelings of intimacy and emotional closeness), *guidance* (knowledge, advice, and expertise), *reassurance of worth* (recognition of one's competence and value), *reliable alliance* (tangible assistance in times of need), *social integration* (a belief of common interests and activities), and *opportunity for nurturance* (feeling responsible for the care of others).

Weiss (1974) proposed that individuals continually seek out these provisions through their interpersonal relationships with others, and like Feeney and Collins (2014), believed that these support functions are not restricted to situations of distress. Weiss (1974) also asserted that the social provisions are differentially salient across one's various life domains. In keeping with this proposition, it follows that only select provisions may be germane to one's relationships within the sport team. For example, within the Weiss (1974) model, perceptions of attachment are more likely to be associated with parent and romantic relationships than with one's relationships with teammates (Furman & Buhrmester, 1985). As well, although potentially available within the sport environment, the provisions of guidance and opportunity for nurturance may be more associated with coach/parent relationships or mentoring relationships than with teammate relationships.

From a face validity perspective, the three remaining provisions – social integration, reliable alliance, and reassurance of worth – all appear to represent dimensions of support that could be salient among teammates. Social integration, which refers to the sense of belonging to a group of others who share common interests, makes intuitive sense since team members hold the shared interest of playing sport and will, at least to some degree, unite around common team goals and objectives in order to maintain their designation as a “team”.

Reliable alliance, which captures the feeling that others can be counted on when needed, may be of particular importance for those on interdependent sport teams. Interdependent sports are those wherein athletes are required to work together to achieve common group goals (e.g., soccer, volleyball; Evans, Eys, & Bruner, 2012). Based on the need for interpersonal interactions to occur in order to optimize group functioning, it might be assumed that perceptions about reliable alliance on these types of teams would be important.

Finally, reassurance of worth is the third provision that may be relevant to teammates as it surrounds perceptions about the extent to which others recognize one’s competence. While this provision may also be associated with other channels of influence in sport (e.g., coaches, parents), perceptions about the availability of reassurance of worth from teammates may be particularly tied to participation-related outcomes. One study found that teammates who were encouraging and supportive were influential in bolstering athletes’ perceptions of competence as well as individual motivation (Vazou, Ntoumanis, & Duda, 2005), both of which may predict individuals’ continued participation with the team.

1.4.2 Cohesion and Teammate Support

Although a relationship has been reported between team cohesion and perceptions about the availability of social support in sport (Westre & Weiss, 1991), this research focused on the coach as the support-provider rather than support perceived to be available from teammates. Consideration of athletes’ perceptions of available support from teammates may help to further our understanding of the interpersonal dynamics (e.g., cohesion) of youth sport teams. At a conceptual level, it is possible that perceptions about the availability of support from teammates may be predicated upon the level of cohesiveness of a team. For instance, those on a highly cohesive team might be more likely to support each other in the pursuit of the important goals and objectives that hold them together.

1.5 Program of Research

1.5.1 Cohesion-Participation Relationship in Youth Sport

Although links between cohesion and several different participation-related outcomes have been demonstrated in adult sport samples, no research to date has reported on this relationship in youth athletes. To address this gap, this series of studies sought to examine if cohesion may be related to participation in youth sport. The purpose of Study 1 was to examine if the set of two cohesion factors (i.e., task/social) were associated with a set of three different participation-related outcomes (self-reported effort, practice attendance, and intention to return to the team the following season) in a youth sport context. The reason for focusing on these three outcomes was two-fold: First, it has been suggested that an athlete's motivation is manifested through behaviours such as effort, persistence, and continued participation (Roberts, 1992). Although activity research has shown a "gap" between an individual's intentions to perform a behaviour and actual behaviour (Rhodes & Dickau, 2012), the intention to return outcome was considered an important inclusion as it represented an athlete's current motivation to participate with the team. Second, these specific outcomes have emerged in previous cohesion research with adult sport samples (Carron et al., 1988; Prapavessis & Carron, 1997a; Spink, 1995).

1.5.2 Cohesion as a Moderator of the Norms-Participation Relationship

A second aim of this research was to consider if athletes' perceptions about team cohesiveness would moderate the relationship between perceptions about teammates' effort levels and individuals' self-reported effort in the team setting. Testing moderation in this study involved examining whether the strength of the descriptive norms-effort relationship varied as a function of athletes' perceptions of team cohesiveness (cf. Bauman, Sallis, Dzewaltowski, & Owen, 2002). Results from a recent sport study revealed that perceptions about how hard were teammates were working (descriptive norms) were associated with individual effort levels (Spink, Crozier, et al., 2013). Based on the salience postulate of the focus theory of normative conduct (Cialdini et al., 1990) described in Study 2, it is possible that this relationship may be more pronounced for athletes on more cohesive teams. Based on the findings from this research, the purpose of Study 2 was to examine the interaction between descriptive norms about teammate effort and team cohesion in relation to individual effort.

1.5.3 Effects of Cohesion and Descriptive Norms

The purpose of Study 3 was to experimentally test the combined effects of task cohesion and descriptive norms. As a follow-up to the correlational findings from Study 2, this experimental study used a vignette-based approach to examine the impact of task cohesion and descriptive norms about teammate effort on individual athlete effort.

1.5.4 Plausibility of Social Support as a Mediator

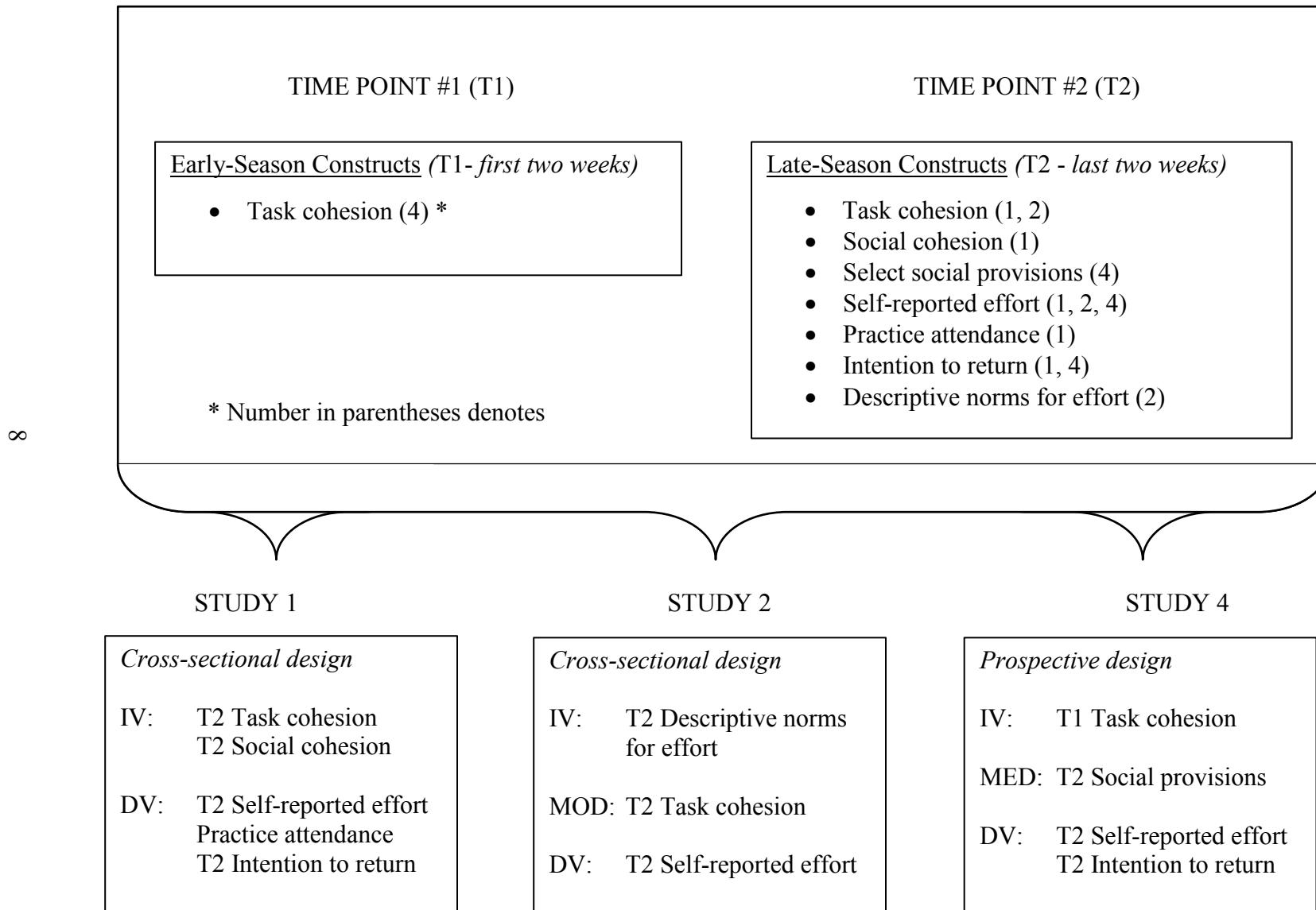
Assuming the emergence of a positive cohesion-participation relationship in Study 1, one explanation for this relationship was examined in Study 4. One possibility for why feeling more cohesive with one's teammates may increase individual participation relates to athletes perceiving a greater availability of social support from teammates. Testing this suggestion involved exploring social support as a possible mediator of the cohesion-participation relationship. Mediators are variables that are proposed that explain the causal pathway between two variables (Bauman et al., 2002). As cohesion refers to team members sticking together and working to achieve team goals, it follows that team members may be more supportive of each other when there are increased levels of bonding around shared goals (i.e., greater cohesion). This idea has been supported empirically through initial studies demonstrating positive relationships between both cohesion and social support (Fraser & Spink, 2002), and social support and team sport participation (Saunders, Motl, Dowda, Dishman, & Pate, 2004). Thus, the purpose of Study 4 was to test the plausibility of mediation by examining all three of these variables – cohesion, social support, and participation – prospectively.

1.6 Overview for Studies 1, 2, and 4

Data from a sample of adolescent soccer players were used for Studies 1, 2, and 4. Information about these participants and how these data were collected will be outlined in detail in Study 1. To avoid redundancy, only information that was not previously described will be provided in Studies 2 and 4 (e.g., additional measures). Figure 1.1 provides an overview of how these data were used to address the main research questions in Studies 1, 2, and 4.

As Study 3 sought to test the results from Study 2 experimentally, this investigation was conducted with a separate sample of adolescent female volleyball players.

Figure 1.1 Constructs examined in Studies 1, 2, and 4



CHAPTER 2

STUDY 1: EXPLORING THE MULTIVARIATE RELATIONSHIP BETWEEN TEAM COHESION AND YOUTH SPORT PARTICIPATION

2.1 Introduction

Participating in organized sport has the potential to result in a number of positive physical and psychosocial benefits (Fraser-Thomas & Côté, 2006). However, owing to the dramatic decline in the number of Canadian adolescents who are involved in sport over the last several decades (Canadian Heritage, 2013), fewer young people are in a position to accrue these possible beneficial outcomes. As a way to promote involvement, researchers have sought to understand the factors associated with participation in youth sport and physical activity (e.g., Biddle, Atkin, Cavill, & Foster, 2011; Strachan, Côté, & Deakin, 2009). It has been suggested that identifying these correlates may provide valuable information regarding the variables that could be targeted in interventions aimed at promoting youth activity participation (cf. Biddle et al., 2011).

One construct that has been implicated in promoting sport participation is team cohesion. Cohesion is defined as “the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). Empirical studies with adults have shown that athletes who hold higher perceptions of the cohesiveness of their sport team exhibit greater participation with the team. Team cohesion has been positively associated with a number of specific participation outcomes, including attendance and punctuality (Carron et al., 1988, Study 2), effort (Prapavessis & Carron, 1997a), intention to return (Spink, 1995, 1998), and actual return to a team (Spink, Wilson, & Odnokon, 2010).

In youth sport, by contrast, there is a dearth of research examining how cohesion may relate to these participation-related outcomes. Although one early investigation with adolescent athletes reported a relationship between team cohesion and player dropout (Robinson & Carron, 1982), that study preceded the development and refinement of the constitutive definition of cohesion that has been commonly used in the sport setting (Carron et al., 1998; Carron, Widmeyer, & Brawley, 1985). Accordingly, there is a need to revisit the cohesion/participation relationship in youth sport.

2.1.1 Extending the Cohesion-Participation Relationship to Youth Sport

As it appears that adolescents' understanding of team cohesiveness differs from their adult counterparts (Eys, Loughhead, Bray, & Carron, 2009b), extending the relationship between team cohesion and participation to youth sport is important. In the original adult model (Carron et al., 1985), the construct of cohesion was conceptualized as having four factors oriented around individual-level ("I") and group-level ("we") perceptions about the task and social elements of the group. Subsequent qualitative research with youth participants revealed a different structure. Adolescents did not distinguish between the individual and group-level orientation, but rather, perceived cohesion only in terms of the task and social aspects of the group (i.e., two-factor structure; Eys et al., 2009b). In view of this conceptual difference, as well as the recognition that "youth are not miniature adults" (Carron & Eys, 2012, p. 271), it cannot be assumed that the relationships found in adult samples will carry over to adolescents. Accordingly, re-examination of these relationships with youth warrants attention.

Further, as the factor structure of cohesion may be different with youth athletes (Eys et al., 2009b), it is less clear which of the factors in the remaining dimension of cohesion (i.e., task or social) may be most associated with participation in this population. Across the different adult athlete studies (e.g., Carron et al., 1988; Spink, 1995), relationships have emerged between both task and social cohesion, and various participation-related outcomes.

2.1.2 Participation as a Multidimensional Construct

Not only is the construct of cohesion multidimensional (i.e., task vs. social), an athlete's participation with the team also can take various forms. Across the numerous empirical studies examining the relationship between team cohesion and individual participation in adult sport, there has been considerable variation in how researchers have examined and operationally defined "participation". For instance, some studies have been concerned with whether or not players attended team practices and games (e.g., Carron et al., 1988), whereas others have focused on specific player behaviours within the team setting (e.g., effort levels; Prapavessis & Carron, 1997a, 1997b). Further, in addition to those current participation outcomes, researchers also have considered players' intentions about future participation with the team (e.g., Spink, 1995). While each of these participation-related outcomes – attending practices, working hard, and intending to return in the future – is important in its own right, it is likely that these outcomes also share some commonality. Unfortunately, existing research has not considered this

possibility, as task and social cohesion have only been related to participation outcomes independently.

Moreover, no studies to date have considered how the set of two cohesion factors (task and social) in combination might relate to a set of multiple participation outcomes. Given the apparent connection between these different measures of participation (effort, attendance, and intention to return), examining them as isolated dependent variables does not consider their potential conceptual and empirical overlap. It is possible that different relationships between cohesion and participation may emerge once controlling for the other participation outcomes. Accordingly, examining all three outcomes in a single analysis may tease out some of the potential overlap and distinctiveness that could exist between these participation-related variables.

2.1.3 Study Purpose and Hypotheses

The main purpose of this study was to examine the cohesion-participation relationship in youth using an approach that considers possible multivariate relationships between these two sets of variables. As this was the first time that the relationship between cohesion and participation has been examined using a multivariate approach, it was unclear how these two multidimensional constructs would combine, so no a priori hypotheses were advanced.

A second purpose for using a multivariate analysis was to clarify which cohesion-participation relationships would be most prominent for the present sample. As this study was the first of three using the same sample of youth soccer players, the relationships that emerged in this study were designed for use in subsequent studies (Studies 2 and 4).

2.2 Methods

2.2.1 Participants

Adolescents ($N = 156$) from 10 intact youth outdoor soccer teams in Saskatoon participated in this study. Participants ranged in age from 12-16 years, with an average age of 13.3 years ($SD = 1.1$). There were more females (72.4%; $n = 113$ on 7 teams) than males (27.6%; $n = 43$ on 3 teams). Participants played on same-sex teams. The head coaches for all 10 teams were male.

The majority of teams ($k = 8$) played in a recreational city league ($n = 124$). Across their 8-week season, these teams held between 3 and 12 practice sessions ($M = 7.1$, $SD = 2.6$) and played between 15 and 23 games ($M = 17.9$, $SD = 2.6$). The two remaining teams competed in a

provincial premier league ($n = 32$). Across their 14-week season, one team held 39 practices and played 15 games, while the other team held 70 practices and played 13 games.

2.2.2 Recruitment

The Saskatoon Youth Soccer organization provided the researcher permission to speak to coaches at a citywide coaches' meeting approximately one month prior to the start of the outdoor soccer season. All coaches of teams with adolescent athletes (i.e., 12-17 years) in the Saskatoon Youth Soccer received a one-page informational handout about the study (Appendix A) in their coach's package. Following a brief presentation about the study at this meeting, the researcher sought coaches' permission to have their respective teams included in the study. Coaches interested in being involved were invited to provide their contact information at this meeting, or alternatively, to follow-up by email or phone with the researcher at a later date. Ten coaches expressed interest in having their teams participate in the study.

The University of Saskatchewan Behavioural Ethics Review Board deemed adolescents capable of consenting to participate in this study (i.e., parental consent was not required). However, parents were informed about study procedures via a parent letter (Appendix B) that was distributed by the coaches in player packages or via email before the start of the season.

2.2.3 Procedure

After informing coaches, parents, and players about the study procedures, the first team visit occurred. This visit occurred within the first two weeks of the season at a regular team practice. During this time, players provided informed consent (Appendix C) and completed an early-season survey. The researcher was present in order to ensure that participants were completing the measures independently of their teammates and to be available to answer any questions about the surveys. Participants took about 15-20 minutes to complete the first survey.

Within the last 1-2 weeks of each team's season, the researcher made a second team visit. These visits, which were approximately 15-20 minutes in duration, consisted of players completing a late-season survey. Although the initial aim was to conduct these visits during a team practice, it became necessary for three of the participating teams to complete their surveys immediately before their final league game due to cancelled practices that occurred because of inclement weather (e.g., rain). No players completed their surveys immediately following a game.

In the event that a player was absent for a team visit, the survey and a self-addressed, stamped return envelope was provided to the coach to distribute to the individual (less than 10% of participants). These surveys were returned either through the mail or in the sealed envelope directly to the team manager or coach, who then made arrangements to return the envelope(s) to the researcher.

2.2.4 Measures

At both time points, participants completed several different measures to assess the constructs of interest for each study (described in more detail in the Methods sections of each individual study), as well as questions capturing personal (e.g., age, sex) and team attributes (e.g., age category, level of competition). Figure 1.1 depicts which constructs were assessed at each time point. It also makes clear the constructs that were drawn from the sample and used in three studies (i.e., Studies 1, 2, and 4) of this dissertation.

With the exception of the questions about personal and team attributes (e.g., age, sex, team's competitive level, etc.), the present study (Study 1) was based on data collected at the second, late-season time point. All of the survey measures used in this study can be found in Appendix D.

Cohesion. To assess perceptions of team cohesion, participants completed the Youth Sport Environment Questionnaire (YSEQ; Eys, Loughhead, Bray, & Carron, 2009a). The YSEQ is an 18-item scale that captures task and social cohesion (8 items for task cohesion, 8 items for social cohesion, 2 spurious negatively-worded items). This measure is based on the constitutive definition of cohesion (Carron et al., 1988) that has been broadly used by activity researchers over the last three decades. In other youth sport studies that have employed the YSEQ, acceptable reliability and validity scores have been reported (e.g., Eys et al., 2009a; Jeffery-Tosoni, Eys, Schinke, & Lewko, 2011; Taylor & Bruner, 2012). In the present sample, the Cronbach's alpha value for both the task and social cohesion subscales was .92.

Participation: Attendance. To capture varying aspects of player involvement with the team, two measures of current participation (practice attendance and effort), as well as one measure of anticipated future participation (intention to return), were used. To assess practice attendance, coaches recorded players' attendance at team practices. As teams differed in the number of practices they held, the attendance variable was reflected as the percentage of practices attended out of the total number of practices that players were expected to attend.

Participation: Effort. The second measure of current participation was players' self-reported effort in practices and games. To assess effort, participants completed a 6-item measure that tapped into their tendency to work long and hard within their team setting. This scale was originally developed for the workplace (Brown & Leigh, 1996), and more recently was modified for use in sport settings (Spink, Wilson, Brawley, & Odnokon, 2013). Specifically, adjustments were made to reflect sport-specific situations (e.g., "when I work" was changed to "when I play"). Small wording changes have been shown to have little effect on the internal consistency or validity of an instrument (Schutz, 1966). An example item from the modified scale used in the present study included, "I work as hard in practice as I do in competition." Items were scored on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). A Cronbach's alpha value of .84 was found for the measure used in this study (Nunnally & Bernstein, 1994). Further, as this measure considers both the time commitment and work intensity that athletes perceive that they put forth in practices as well as games, it was considered to be a valid assessment of players' self-rated effort levels over the season.

Participation: Intention to return. To capture players' perceptions about future participation, intention to return to the team was assessed using a two-item measure developed for this study that reflected the likelihood of them being involved with their current team in the future. These two items included, "If this league started again next week, how likely would you be to return to playing with this team?" and "If you had the choice to play on any team next season, how likely are you to return to playing with this team again?" Both items were scored on a 5-point Likert scale, ranging from 1 (not at all likely) to 5 (very likely). The bivariate correlation between the two items on this scale was .84.

2.2.5 Data Analysis

Data screening. Before conducting the main analysis, the items representing the variables of interest (task and social cohesion, self-reported effort, practice attendance, and intention to return) were screened for potential errors in data entry and missing values. Also, all variables were examined for linearity, normality, homoscedasticity, and multicollinearity. Specifically, histogram and P-P plots were inspected, and skewness and kurtosis values assessed, to ensure there was no violation of the analysis assumptions. As well, given that correlations above .80 would indicate multicollinearity (Field, 2009), these were checked within the variable sets.

Main analysis. Canonical correlation analysis (CCA) was used to examine the multivariate relationship between task and social cohesion, and the three participation outcomes – self-reported effort, practice attendance, and intention to return. CCA evaluated the degree to which the two variable sets (cohesion and participation) were related by redistributing the variables into a series of orthogonal functions, each consisting of a pair of canonical variates (artificially-created variable combinations) that are maximally correlated. As the number of functions that are computed will be equal to the number of variables in the smaller variable set (cohesion in this study), two orthogonal canonical functions were computed for the present analysis.

Although individual regression analysis could have been used to examine the relationships between cohesion and each of these participation outcomes separately, a multivariate approach was considered advantageous for two reasons. First, this method limits the inflation of Type I error rates that are problematic when running multiple regressions (Thompson, 1991). Rather than conducting three regression analyses to look at each dependent variable separately, CCA allows the researcher to simultaneously consider the full network of variable relationships between the two variable sets. As well, there also is the possibility for multivariate relationships to be missed when the data are studied with univariate methods (Fish, 1988).

A second, and more substantive advantage of using a multivariate procedure is that it may do a better job of representing the complex relationships that are common in social-psychological research (Sherry & Henson, 2005). As mentioned previously, it may be naïve to assume that the various participation-related outcomes are independent of each other. Rather, it is more probable that they are inter-related. For example, it is possible that the players who attend the most practices are also the ones who put forth the most effort and express a greater intention of coming back to the team in the future.

2.3 Results

2.3.1 Evaluation of Assumptions

Examination of the distributions revealed no violations to the assumptions of linearity, normality, and homoscedasticity for any of the variables of interest. There were no outliers. Further, as shown in Table 2.1, all of the bivariate correlation coefficients across the variables of interest (task and social cohesion and the three participation variables) were equal to or below .60, suggesting that there was no multicollinearity.

Table 2.1 Bivariate correlations between Study 1 variables

Variable	2	3	4	5
1. Task cohesion	.36**	.10	.36**	.60**
2. Social cohesion	--	.20*	.31**	.28**
3. Attendance		--	.10	.19*
4. Self-reported effort			--	.24**
5. Intention to return				--

* $p < .05$, ** $p < .01$

2.3.2 Missing Data

As the analysis used in the current study (canonical correlation analysis) is highly sensitive to missing data (Tabachnick & Fidell, 2007), participants who had missing values on any of the variables ($n = 26$) were not included in the current study analysis, leaving 130 for the analyses. Of note, 24 of those deleted were not present for the second testing, while the remaining two athletes missed completing at least one of the study measures. Participants excluded from the analysis were compared with remaining participants on several demographic variables (e.g., age, sex, early-season cohesion). Results from chi-square tests revealed no significant between-group differences in the proportion of males and females ($p > .05$). Independent samples t -tests were used to assess differences in the age and levels of early-season cohesion. No between-group differences emerged on either of these variables ($ps > .05$).

2.3.3 Descriptive Statistics

The means, standard deviations, ranges, and internal consistency reliability values for the cohesion and participation measures are reported in Table 2.2.

Table 2.2 Descriptive statistics for the Study 1 variables

Variable (scale range)	Mean	SD	Range	Cronbach's alpha
Task cohesion (1-9 scale)	7.1	1.3	3.25 – 9.0	.92
Social cohesion (1-9 scale)	5.5	1.8	1.5 – 9.0	.92
Attendance (0-100%)	74.5	21.9	14 - 100%	---
Self-reported effort (1-7 scale)	5.8	.76	3.3 – 7.0	.84
Intention to return (1-5 scale)	4.1	1.0	1.0 – 5.0	.84

Note: SD = standard deviation.

2.3.4 Main Analysis

Canonical correlation analysis was used to examine the relationship between the set of cohesion (task and social cohesion) and participation variables (self-reported effort, practice attendance, and intention to return). Overall, results showed that the full canonical model was significant, Wilks' $\lambda = .54$, $F(6, 250) = 14.8$, $p < .001$, indicating a significant amount of overlap in the variability of the variables in the two sets. The canonical correlation for Function 1 was .66, and accounted for the majority of the variance (43.1%) between the two variable sets. The canonical correlation for Function 2 was .21, and accounted for only 4.3% of the variance between the variable sets.

Table 2.3 presents the standardized canonical function coefficients and structure coefficients for functions 1 and 2. The function coefficients, which are analogous to beta weights in linear regression, indicate the degree to which each variable relates to the other canonical variate. The structure coefficients, on the other hand, represent bivariate correlations between each original variable and its own canonical variate. It has been recommended that both values be considered when interpreting the importance of each function (Thompson, 1991). Although the function coefficients are useful for describing the strength and direction of the relationships between the canonical variates (analogous to beta coefficients in regression analysis), the structure coefficients reveal the statistical meaning of the artificially-created

canonical variates (analogous to factor loadings in exploratory factor analysis). Values of .55 or above are underlined as they were considered important for the model based on recommendations by Comrey and Lee (1992) that this cutoff value captures loadings that are “good”, “very good”, or “excellent”.

Also included within Table 2.3 are the squared structure coefficients across the two functions for each variable, which represent the amount of variance that each original variable contributes to the function.

Table 2.3 Canonical structure for task and social cohesion predicting participation

Variable	Function 1			Function 2		
	Coeff	r_s	r_s^2 (%)	Coeff	r_s	r_s^2 (%)
Predictor						
Task cohesion	.90	<u>.98</u>	96.0	-.58	-.21	4.4
Social cohesion	.22	.54	29.2	1.05	<u>.84</u>	70.6
Criterion						
Self-reported effort	.40	<u>.60</u>	36.0	.58	.52	27.0
Practice attendance	-.02	.22	4.8	.77	<u>.71</u>	50.4
Intent to return	.82	<u>.92</u>	84.6	-.56	-.27	7.3
R_c^2			43.1			4.3

Note. Coeff = standardized function coefficient; r_s = structure coefficient; r_s^2 = squared structure coefficient.

In terms of Function 1, the squared structure coefficients indicated that the relevant criterion variable was task cohesion, with a standardized canonical function coefficient of .90 and a structure coefficient of .98. On the other side of the equation, the primary contributors were effort and intention to return, which had standardized canonical function coefficients of .40 and .82, and structure coefficients of .60 and .92, respectively. As well, the two sets of variables were positively related to each other, indicating that participants who held higher perceptions of task cohesion reported working harder and expressed a greater intention to return to the team.

By comparison, function 2 contributed far less to the overall canonical solution. As the significant relationships between the two sets of variables were largely captured by the first function, the relationships that emerged within function 2 were not considered meaningful enough to be interpreted for variable importance. Further, Sherry and Henson (2005) have suggested that the first function in a CCA is often the most informative, considering that the functions have combined the variable sets in ways that maximize the shared variance between them. Given the orthogonal nature by which these functions are created, subsequent functions capture comparatively less variance, and thus tend to reflect weaker relationships between the variable sets.

2.4 Discussion

The overall aim of this study was to examine the multivariate relationship between task and social cohesion, and three youth sport participation outcomes – practice attendance, self-reported effort, and intention to return to the team. Consistent with previous research conducted with adult athletes (Prapavessis & Carron, 1997a; Spink, 1995), a positive relationship emerged between cohesion and participation. This was the first study to demonstrate a cohesion-participation relationship with a youth sample using Eys et al.'s (2009a, 2009b) operational definition of cohesion.

Study results revealed that task cohesion was associated with two participation outcomes. Specifically, those who held higher perceptions of task cohesiveness within their sport team also reported exerting more effort within the team setting as well as indicating a greater intention to return to the team in the future. In terms of the emergence of a relationship between task cohesion and individual effort, this finding was similar to Prapavessis and Carron (1997), who showed that adult athletes who perceived greater task cohesion within their team demonstrated higher work output during a team training session.

Task cohesion also emerged in relation to intention to return. This differs from what has been reported previously with this participation outcome, as Spink (1995) found that social cohesion was a more reliable predictor of intention to return than task cohesion in two independent samples of adult female ringette players. One possible explanation for this difference concerns the fact that the participants in the two Spink (1995) samples were adult females, and it is possible that the social aspects of the sport team are a more salient correlate of activity participation for adult women (Mathes & Battista, 1985).

The result that only task cohesion was associated with participation should be interpreted within the inherent limitations of canonical correlation analysis. As a nomothetic approach, canonical correlation analysis is designed to broadly capture the shared variance between two sets of variables (canonical variates) within a dataset, and not the variance accounted for by the individual variables. In the present study, this multivariate technique was used to statistically account for the conceptual overlap between the two sets of variables as well as determine where the strongest relationships were evident. However, in doing so, it is possible that some information may have been lost. For example, the non-emergence of social cohesion within the canonical correlation analysis may have been due, in part, to its covariation with task cohesion, and not because it was not related to the participation-related outcomes in some meaningful way. As univariate results showed that social cohesion was positively associated with each of the three participation outcomes independently, it is premature at this early stage of research to discard the potential for social cohesion to emerge as a relevant correlate of athletes' participation with the team in other youth samples.

Interestingly, results indicated that neither cohesion factor was related to player attendance in this sample. This differs from research in the adult sport setting that has reported a positive cohesion-attendance relationship. Carron et al. (1988) found that adult recreational sport participants who held higher perceptions of social cohesion were more likely to attend team events (practices and games). There are several explanations for why a relationship between cohesion and attendance may not have emerged in the present study.

A likely possibility surrounds the fact that decisions regarding attendance may not be completely volitional for youth athletes. It has been suggested that the degree to which youth can select whether to participate in organized activities, such as sport, is dependent not only on the individual, but also on a number of other familial and contextual factors (Mahoney, Larson, Eccles, & Lord, 2005). As the majority of participants in the current study ranged in age from 12 to 14 years (i.e., young adolescents), parents may have been partially involved in deciding whether or not the athletes attended practices. Research has shown that, for young adolescents, factors such as a lack of transportation and parents denying/withholding permission to participate can be barriers to involvement in organized activity (Hultsman, 1992).

Another possible explanation for why cohesion was not related to player attendance in this study surrounds potential conflicts participants may have had with other required commitments.

For example, the season for the present sample of teams spanned from late April until early July, so it is likely that players may have a number of school-related activities in the latter half of the season (i.e., mid-late June), such as final exams, end-of-year band concerts, and school graduations. Thus, it may have been that participants' reasons for missing practice were not due to team-related factors, but rather, because of other commitments. One limitation in interpreting the non-emergence of a relationship between cohesion and attendance is that players' specific reasons for missing practice were not directly assessed in this study.

2.4.1 Study Limitations

In addition to the inability to interpret athletes' attendance behaviour in this study, three other limitations are worth noting. First, as this was a cross-sectional design conducted at only one time point (i.e., within the last two weeks of the season), cause-and-effect cannot be inferred from the relationships that were observed. Future studies employing team-building protocols (Bruner & Spink, 2010) could be helpful in trying to understand how manipulating perceptions of cohesion could differentially influence various participation outcomes, such as those examined in the current study.

On a related note, a second limitation was that most of the measures were assessed using self-report questionnaires. When this is coupled with the cross-sectional design, part of the emerging relationships may have included some common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To minimize this issue, it would be wise to consider how some of the participation-related constructs could be assessed differently. For example, in terms of effort, one alternative would be to include important others' ratings (e.g., coach, teammates) within the appraisal of how hard players are working (e.g., a combined score averaging individual and coach ratings; Bray & Whaley, 2001).

A third limitation relates to the potential for some selection bias in the current results. Twenty-six participants (17% of the original sample) missed completing the measures at the second data collection time point, and thus, were excluded from the current analysis. As comparisons between those included versus excluded revealed no significant differences across select demographic variables and early-season cohesion, there appeared to be no systemic reasons for those who remained versus those who were absent for the late season assessment.

2.4.2 Study Strengths

Despite these limitations, this study also included several notable strengths. First, this study was the first to report a relationship between team cohesion and individual participation in a youth sport setting. Finding that adolescent soccer players' perceptions of task cohesiveness were positively associated with two participation outcomes (effort and intention to return) mirrored previous research with adult athletes reporting relationships (Prapavessis & Carron, 1997a; Spink, 1995).

Future testing is necessary to determine whether the findings that emerged in this study can be replicated in other youth samples and with different participation outcomes included in the model. As canonical correlation analysis considers the relationship between two linear strings of variables, rather than the relationship between individual variables, it is highly sensitive to small changes in the data set (Tabachnick & Fidell, 2007). As the results are derived from both the correlations within each variable set as well as correlations between canonical variates, it is possible that changing the participation outcomes could result in the emergence of different relationships with cohesion.

A second strength of this study was consideration of the multidimensional nature of "participation". Past studies examining the link between cohesion and participation have always considered only one participation outcome at a time. As an athlete's involvement with the team can involve many factors (e.g., showing up to games and practices, working hard, and holding positive cognitions about the team), it may be that this body of research has been missing key information on participation. By accounting for possible redundancy in task and social cohesion, as well as the participation outcomes examined, this study has provided a more complete description of the cohesion-participation link.

A third strength of this study was the use of a cohesion measure (YSEQ) that was specifically designed for adolescent sport participants. As adolescents' conceptualization of cohesion has been found to differ from adults (Eys et al., 2009b), a population-specific instrument to assess cohesion was considered an important inclusion in this study. Although this study offers support for the predictive validity of the YSEQ (i.e., by establishing a relationship with a set of participation outcomes), assessing the validity of this cohesion measure should remain a continued area of future research.

Overall, this study makes an important contribution to extant literature by providing initial support for the multivariate association between team cohesion and participation with a youth sport team. Specifically, findings underscored the potential import of feeling united around the team tasks, as task cohesion was positively associated with current participation (i.e., individual effort) as well as anticipated future participation (i.e., intention to return) with the team. As the goal of this study was to clarify if a set of cohesion factors were associated with a set of participation outcomes, it is important that this initial finding be interpreted within the context of the present sample. The possibility remains that future research with other youth sport samples may find relationships involving social cohesion or other participation outcomes.

2.5 Bridge to Study 2

The results of this study offered preliminary information about which cohesion factors may be related to which individual participation outcomes in youth sport. In this sample of soccer players, higher perceptions of task cohesion were positively correlated with effort as well as intention to return. While cohesion was considered as an independent variable in this study, it also has been suggested that cohesion could be used as a moderator variable (Griffith, 2007). Thus, the purpose of Study 2, partly based upon the results of Study 1, was to investigate task cohesion as a potential moderator of another relationship examining individual effort as a participation outcome.

CHAPTER 3

STUDY 2: COHESION AND DESCRIPTIVE NORMS IN RELATION TO INDIVIDUAL EFFORT IN YOUTH SPORT

3.1 Introduction

In youth sport, tremendous value is typically placed on working hard. Athletes' effort levels are considered to be integral to both individual performance (Sarrazin et al., 2002) as well as team success (i.e., win/loss; Giacobbi et al., 2002). Despite the recognized importance of working hard in sport, the reality is that athletes' effort is a discretionary resource. Athletes can give or withhold effort of their own volition. As such, there may be considerable variability both within the team as well as across teams in how much effort individual team members put forth. Thus, understanding factors that are tied to varying levels of effort is important, and worthy of examination.

While many aspects relating to the individual athlete as well as the broader sport environment could contribute to athlete effort, increasing attention within the youth sport realm is being devoted to social influence. One line of investigation involves identifying who the most salient channels of influence may be for athlete effort (e.g., Keegan, Spray, Harwood, & Lavallee, 2010). While coaches are commonly assumed to be the primary motivator of their players' effort (Mageau & Vallerand, 2003), studies also have identified teammates as another potentially influential channel within the youth sport setting (Bray & Whaley, 2001; Spink, Crozier, et al., 2013).

3.1.1 Teammates and Individual Effort

Considering that peers have been recognized as an important channel of influence in structured activity settings (e.g., sport; Spink, Wilson, & Ulvick, 2012), it follows that the peers on one's sport team (i.e., teammates) may exert a strong influence on individual member behaviour (Turner, 1991). In terms of individual effort, one way that teammates could be influential is by modeling hard-working behaviours. Social learning theory (Bandura, 1977) posits that people learn how to behave in certain situations by observing and imitating others' behaviour. For example, if an athlete observes that another team member is working hard, he/she may be more likely to work hard as well.

Although modeling has been recognized for its role within the youth activity realm (Smith, 2007), less attention has been paid to how the behaviours of a collective may influence

individual behaviour. Within a team setting, it is possible that the effort levels of only one team member may have little effect on how hard an athlete works. However, the effect might be totally different if many teammates are perceived to be working hard. In this situation, the athlete might follow the behaviour of his/her teammates by working hard as well. Research from outside of sport has shown that individuals tend to behave more in line with the perceived behaviours of a collective (i.e., social norm; Cialdini et al., 1990). In sport, perceptions of team norms about various athlete behaviours (e.g., cheating, aggression, etc.) have been linked to individuals' likelihood to act in similar, norm-consistent ways (e.g., Shields, LaVoi, Bredemeier, & Power, 2007).

3.1.2 Descriptive Norms and Effort

Norms come in different forms, and the one of interest in the present study is descriptive norms. These norms reflect individual perceptions about others' *actual* behaviour (Cialdini et al., 1990). According to Cialdini and colleagues, descriptive norms motivate behaviour by providing evidence about what behaviour is likely to be most acceptable in a given situation. That is, rather than an individual having to cognitively process how to act, descriptive norms offer a decisional shortcut for choosing an appropriate behaviour by capturing what everyone else is doing. In short, "if others are doing it, I will too".

In that vein, perceiving that one's teammates are working hard may cue an athlete to exert similar levels of effort. Recent research examining the link between descriptive norms for teammate effort and individual effort supports this suggestion, as it was found that adolescent athletes' self-reported effort was positively associated with their perceptions about how hard teammates were working (Spink, Crozier, et al., 2013). The findings of this initial study were consistent with the descriptive norms research conducted outside of the activity setting (e.g., Cialdini et al., 1990; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008) and offered evidence for the fact that youth sport participants' effort tends to align with that of their teammates.

3.1.3 Cohesion as a Moderator of the Norms-Effort Relationship

Given the importance accorded to the environment in understanding human behaviour (Lewin, 1951), identifying potential team factors that might moderate the norms-effort relationship in sport would improve our understanding of athlete effort by shedding light on

when the impact of descriptive norms may be strongest (cf. Bauman et al., 2002). One possible team moderator of the relationship between descriptive norms and individual effort is cohesion.

Cohesion refers to “the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). Implicit within this definition is the notion that players who are more united in the pursuit of instrumental objectives might be more inclined to pay attention to team norms as well as work hard to achieve the team’s shared goals. The intent of this study was to examine the potential moderating role of task cohesion in the descriptive norms-effort relationship.

The rationale for focusing on task cohesion was two-fold. First, task cohesion has emerged as a factor associated with the individual effort of athletes. For example, a positive relationship between task cohesion and individual effort has been demonstrated across empirical studies with both adult athletes (Prapavessis and Carron, 1997a) and adolescent athletes (Study 1). Second, as task cohesion relates the extent to which team members are perceived to be working together toward team goals, there is an implied conceptual link between a team’s task cohesiveness and athletes’ effort levels.

One possible explanation for why task cohesiveness may represent a plausible moderator of the descriptive norms-effort relationship relates to how descriptive norms are proposed to influence behaviour. The focus theory of normative conduct specifies that the norm must be focal to the individual if descriptive norms are to impact behaviour (i.e., salience postulate; Cialdini, Kallgren, & Reno, 1991). Thus, it follows that descriptive norms about others’ behaviours (e.g., effort) would be most effective in influencing individual behaviour when those perceived behaviours become focal in one’s consciousness. It might be assumed that athletes who hold higher perceptions of task cohesion would be more likely to pay attention to whether their team members are behaving in accordance with team goals. As such, athletes on more cohesive teams will be more attendant to normative behaviours that could potentially promote the attainment of team goals, such as the effort levels of teammates.

3.1.4 Study Purpose and Hypotheses

The purpose of the present study was to examine task cohesion as a potential moderator of the descriptive norms-individual effort relationship in intact youth soccer teams. Based on findings from Spink et al. (2013), who reported a positive relationship between descriptive

norms and effort in their examination of youth sport athletes, it was predicted that descriptive norms for effort would be positively related to self-reported effort. However, in line with the suggestion that those on more cohesive teams will be more likely to pay attention to team norms (i.e., increased norm salience; Cialdini et al., 1991), it was predicted that the main effect of descriptive norms would be superseded by an interaction between norms and task cohesion. Specifically, it was hypothesized that the relationship between descriptive norms for effort and individual effort relationship would be strongest for athletes who perceive their team to be more cohesive.

3.2 Methods

3.2.1 Participants

This study used the original 10-team sample of soccer players with complete data ($N = 130$) described in Study 1. It represents a secondary analysis of the data with a different research question.

3.2.2 Measures

Task cohesion. Athletes' perceptions of task cohesion were assessed within the last two weeks of the season using the same measure described in Study 1. The decision to focus only on task cohesion was based on the emergence of this factor in Study 1, as well as the implicit conceptual link between task cohesiveness and athlete effort outlined in the previous study.

Descriptive norms for effort. To assess each team's norm for effort, players were asked to identify (by nomination), from a complete list of team members, which players on their team "worked as hard as they could" during the season (see Appendix E). Descriptive norms were then operationalized using a "network density" value for each team to represent the overall degree to which the players on the team, as a whole, felt their teammates were working hard (i.e., descriptive norm about teammates' effort). Mathematically, network density was defined as the proportion of *actual* teammate nominations made within each team out of the number of *possible* nominations on that team, with values ranging from 0 to 1 (Prell, 2012). This variable was calculated by dividing all of the nominations made by players on a given team by the total number of nominations that were possible on that team. A higher density score was associated with a higher norm for effort.

For example, a 15-player team could make up to 210 total nominations (i.e., 15 players multiplied by 14 possible nominations per player). If that team's actual number of nominations

was 196, then the team network density would be calculated as follows: $196 \div 210 = .93$. For teams that had missing data (e.g., team member(s) did not complete the survey), the number of possible nominations (i.e., denominator value) was adjusted to represent the number of possible nominations that could have occurred based on the number of players who completed the survey.

Both the peer nomination approach used to capture teammate effort, as well as the examination of network density, are strategies that fall within the purview of social network analysis (SNA; Prell, 2012). Although SNA methodologies have received limited attention with the area of sport psychology, it has been argued that these techniques may be particularly useful for studying the complex intragroup relations that exist within sport teams (Lusher, Robins, & Kremer, 2010).

Individual effort. Athletes' self-reported effort was assessed using the same measure described in Study 1.

3.2.3 Data Analysis

Data screening. The assumptions for linearity, normality, and homoscedasticity were checked and described in Study 1.

Network density. Preliminary analysis involved using UCINET6 (social network analysis) software to calculate network density values for each team from players' nominations of their teammates' effort.

Analysis of independence. As players were nested within intact soccer teams, the first step tested whether players' responses regarding their effort levels were independent of their teammates. Using HLM 7.0 software (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011), an unconditional model was examined with only the outcome variable (effort) included. This model captured the proportion of the variance in players' self-reported effort levels that could be attributed to team membership by calculating an intraclass correlation coefficient (ICC). ICC values range from 0 to 1, with higher values indicating a greater degree of response interdependence among team members.

The present analysis revealed an ICC of .024. This ICC value indicates that almost all of the variance in individual effort (97.6%) was attributable to individual-level variation. Although there are no widely accepted cut-points for determining when a multilevel analysis is preferred, one 'rule of thumb' is that individual-level approaches may be acceptable when ICC's are less

than .05 (Schoemann, Rhemtulla, & Little, 2014). As the current ICC fell below that value, an individual-level analysis was deemed appropriate to examine the main research question.

Main analysis. The question of whether task cohesion moderated the descriptive norms-individual effort relationship was assessed using hierarchical regression analysis. The outcome variable was self-reported individual athlete effort. On the first step, the centered values for descriptive norms for effort and task cohesion were entered as predictors. Centered values were used to reduce the risk of multicollinearity between the individual predictors and the interaction term (Tabachnick & Fidell, 2007). On the second step, an interaction term of the two centered variables was entered as an additional predictor. Using a technique described by Aiken and West (1991), a post hoc simple slopes analysis was planned as a follow-up to a statistically-significant interaction.

3.3 Results

3.3.1 Descriptive Statistics

The mean score for task cohesion was 7.1 ($SD = 1.3$), with scores ranging from 3.3 to 9. In terms of the team density scores (descriptive norms), which reflected the proportion of athletes on each team who were identified for working as hard as they could, the mean across the 10 teams was .85 ($SD = .08$). This value indicates that, on average, 85% of the total possible teammate nominations for working hard were made by team members. The lowest team norm had a density value of .66 and the highest team norm had a density value of .97. Finally, the mean for self-reported effort was 5.8 ($SD = .76$), with scores ranging from 3.3 to 7.

3.3.2 Main Analysis

Results revealed that the overall hierarchical regression model was statistically significant, $F(3, 126) = 8.57, p < .001$, with the predictors accounting for 17.0% of the total variance in individual effort. Results for the first step of the regression revealed that norms for effort and task cohesion were significantly associated with self-reported individual effort, $F_{\text{change}}(2, 127) = 12.8, p < .001$, and accounted for 16.8% of the total variance. Both descriptive norms for effort ($\beta = .19, p = .02$, semipartial correlation = .19) and task cohesion ($\beta = .33, p < .001$, semipartial correlation = .32) were significant predictors of individual effort. Contrary to

expectations, the addition of the interaction term on the second step did not add significantly to the prediction of effort, $F_{\text{change}}(1, 126) = .27, p = .61$.¹

3.4 Discussion

This study examined whether perceptions of team cohesiveness would moderate the relationship between descriptive norms for effort and self-reported individual athlete effort in youth sport teams. While both descriptive norms and team cohesion have been independently related to athlete effort (Spink et al., 2013; Study 1), this was the first study to examine these two constructs in the same predictive model. It was predicted that cohesion would emerge as a significant moderator of the descriptive norms-effort relationship, such that athletes on more cohesive teams would report more norm-consistent levels of effort.

The first notable finding from this study was the emergence of a positive association between descriptive norms and individual effort. Specifically, athletes who were members of teams with a greater norm for working hard tended to rate their own effort levels higher. This result is the second demonstration of this relationship in intact youth sport teams, supporting what Spink et al. (2013) reported previously. Together, these studies provide correlational evidence for the suggestion that perceptions of teammates' effort behaviour may be associated with individual athletes' effort within the context of youth sport. Moreover, this study used a novel approach for assessing descriptive norms about effort, whereby players nominated teammates who worked as hard as they could, and then a network density score was calculated to represent the proportion of "effort nominations" that were made on each team. In contrast to the methodology used by Spink et al. (2013) that captured descriptive norms at an individual level, the network density approach characterized athletes' perceptions of their teammates' effort at a team level.

A second finding was that task cohesion also related to individual effort. While this may not be entirely surprising given that this relationship was reported in Study 1 with the same sample of young athletes, it is noteworthy, as this study employed different variables as well as a

¹ Although the ICC value was low (.02), there was still potential for some response dependence given that participants were nested within intact teams (Raudenbush & Bryk, 2002). Thus, a multilevel analysis was conducted to rule out the possibility of a Type I error, and the results were found to be consistent with the current regression results.

different statistical analysis. In Study 1, canonical correlation analysis was used to examine the multivariate relationship between task and social cohesion, and three participation-related outcomes. In this study, multiple regression analysis was used to examine how task cohesion and descriptive norms for effort would relate to individual effort. Although these techniques are similar in that they both quantify the strength of linear relationships (Tabachnick & Fidell, 2007), it cannot be assumed that the relationship between an independent variable (task cohesion) and a dependent variable (individual effort) will necessarily be the same once other variables are included in the model.

A third finding from this study was the non-significant interaction between cohesion and descriptive norms. Although task cohesion and descriptive norms were both independently, and positively, related to individual effort in this sample, the descriptive norms-effort relationship did not differ based on how cohesive athletes perceived their teams to be. This was surprising, considering that it was assumed that players on more cohesive teams would tend to pay more attention to teammates' behaviour. According to the second postulate of focus theory (i.e., need for norm focus; Cialdini et al., 1991), this increased focus on the normative information conveyed by teammates' behaviour should result in members who are more likely to conform to team norms.

One explanation for the non-significant interaction may be the lack of variability in the cohesion scores. Participants' ratings of team cohesion were relatively high (7.1 on a 9-point scale). Given that responses typically fell on the high end of the scale, it is possible that there was not enough of a distinction between athletes who perceived higher versus lower cohesion for this construct to emerge as a moderator. Had there been more athletes who responded on the lower end of the cohesion scale, it is possible that this increased variability may have improved the likelihood of an interaction emerging between cohesion and descriptive norms.

Another possible explanation for the non-significant interaction may be that higher perceptions of task cohesiveness do not serve as a moderator in the descriptive norms-effort relationship. It is possible that there is no association between feeling more cohesive around the shared tasks and goals of the group and a heightened focus on normative information about teammates' effort. This speculation would be consistent with the results of one sport study where no relationships were reported among task cohesion, team norms, and perceived effort in an adult population (Patterson, Carron, & Loughhead, 2005).

3.4.1 Study Limitations

As mentioned in Study 1, this sample was comprised primarily of young adolescent females. Thus, the results cannot be generalized beyond the purview of that group. Further, given that this study was conducted with soccer players, results also are limited to this sport. Considering that soccer is an interdependent sport whereby players are constantly interacting during game play, it cannot be assumed that the relationships observed in this study among cohesion, descriptive norms, and individual effort, would necessarily extend to different sport types. In sports where players may be less interdependent around the team's tasks (e.g., individual sports), there is less need for athletes to be aware of the behaviours of team members. For example, in the case of track and field, athletes are all considered to be members of the same "team". However, when it comes to the factors that may impact individual effort, it is less likely that a 100-metre sprinter will be influenced by his perceptions about how hard his jumping and throwing teammates are working.

Further, as the mean values for both of the independent variable measures (i.e., descriptive norms and task cohesion) were on the higher end of their respective scales, this also may have influenced the results that emerged. Not only did participants' perceptions of task cohesion tend to be high, but the number of nominations that were made endorsing teammates' effort also suggested that the teams in the present sample were relatively hard-working. In a different sample of young athletes where there might be more response variation, it is possible that different relationships between descriptive norms about effort, task cohesion, and individual effort might emerge.

3.4.2 Study Strengths

Despite the limited generalizability of these findings, this initial study does have several strengths worth noting. One strength was its conceptual basis. As both cohesion (Carron et al., 1985) and descriptive norms (Cialdini et al., 1990) have established conceptual underpinnings, and these constructs have been empirically examined in previous sport studies in relation to effort (Prapavessis & Carron, 1997a; Spink, Crozier, et al., 2013), this adds validity to the study findings. Also, the findings contribute to an emerging literature in the youth sport area that has focused on understanding peer influence generally (Keegan et al., 2010; Spink, Crozier, et al., 2013; Ullrich-French & Smith, 2006; Vazou et al., 2005), and team cohesion more specifically (e.g., Eys et al., 2009a; Eys et al., 2009b).

Another notable strength of this study was that it built on previous descriptive norms research by establishing the descriptive norms-individual effort relationship with a different measure. The one previous study examining descriptive norms in a youth sport setting (Spink, Crozier, et al., 2013) assessed perceptions of teammate effort on a 7-point Likert-type scale, whereas participants in this study individually nominated those teammates who they perceived to be working hard. It is possible that this nomination approach may have minimized the potential for common method variance to influence the relationships observed (Podsakoff et al., 2003). As both of the other variables in this study (cohesion, effort) were assessed via self-report measures, including others' responses in the operationalization of descriptive norms (i.e., team density) may have helped to reduce any of the covariance in the independent and dependent variables that was attributable to common rater effects.

In terms of using peer nomination to assess descriptive norms, two questions remain for future research that involve examining the validity of using this strategy as a possible estimate of norms. One question concerns whether the network density scores did, in fact, represent norms. Although this strategy allowed each team's overall effort levels to be quantified at a team level, whether those numbers actually represent norms cannot be determined as there is no established minimum quantifiable value for what is regarded as "normative" (Shaw, 1976). Along similar lines, another question relates to whether participants perceived the overall effort levels of their teammates as the norm for the team. Given that participants assessed teammates' effort on an individual basis (i.e., player by player), and were not asked to reflect on teammates' effort levels as a whole, it is unclear whether athletes would have perceived these individual nominations as team norms.

Further, it may be helpful to consider other ways of assessing descriptive norms about teammates' effort. While the current study focused on athletes' general perceptions about team members' effort, it might be more informative to examine effort with respect to specific tasks. As one example, having athletes focus on instances where effort is demanded (e.g., conditioning drills in practice) may provide a more discerning measure of teammate effort, thereby providing increased response variation.

This study represented a first attempt at examining cohesion and descriptive norms in relation to athlete effort in youth sport. While only main effects emerged for cohesion and descriptive norms, it may be too early to conclude that cohesion does not play a moderating role

in the descriptive norms-effort relationship. It might be helpful to re-examine this research question with a more heterogeneous sample (e.g., other team-based sport types; Evans et al., 2012) to try to elicit more variability in responses.

3.5 Bridge to Study 3

This correlational field study was the first to examine the relationship between both task cohesion and descriptive norms, and athlete effort. Task cohesion and descriptive norms both emerged as independent and positive predictors of athletes' self-reported effort. Given that the correlational design precluded making any inferences related to cause and effect, the aim of Study 3 was to extend the current findings by examining the combined effect of cohesion and descriptive norms using an experimental study design.

CHAPTER 4

STUDY 3: AN EXPERIMENTAL EXAMINATION OF THE EFFECTS OF TEAM COHESION AND DESCRIPTIVE NORMS ON INDIVIDUAL EFFORT IN YOUTH SPORT

4.1 Introduction

Being involved in sport is recognized as one way for youth to learn a number of important life skills, one of which is the ethic of hard work (Gould & Carson, 2008). When it comes to exerting effort, however, one may wonder what aspects of the sport environment might encourage young athletes to work hard. In the team setting, one factor that might be connected to an athlete's effort level is social influence. Social influence captures the extent to which other people may impact, either directly or indirectly, how an individual thinks and acts (Turner, 1991).

In terms of social influence, two group constructs appear relevant with respect to athlete effort. One of these constructs is team cohesion, which refers to an individual team member's perception of different dimensions of the team's unity (Carron et al., 1985). In research with adult athletes, cohesion has been related to several important participation-related outcomes in sport, including individual effort. For instance, Prapavessis and Carron (1997a) found that those who felt more task cohesive with their teammates expended higher levels of effort on a physical task. As well, the results from Study 1 in this dissertation extended that finding to the youth sport setting by demonstrating a positive link between task cohesion and individual effort in a sample of adolescent soccer players. Specifically, athletes who held greater perceptions of task cohesion also reported working harder in their team environment.

A second group construct that may be relevant to athlete effort is descriptive norms. Within social psychology, descriptive norms have been defined as perceptions about others' actual behaviour (Cialdini et al., 1990). An initial study examining descriptive norms within the sport domain reported a positive link between perceptions about teammates' effort levels and individual athlete effort (Spink, Crozier, et al., 2013).

In addition to the youth sport studies that have examined cohesion and descriptive norms independently (Spink, Crozier, et al., 2013; Study 1), attention also has been paid to how these two constructs together may relate to individual athlete outcomes. Study 2 of this dissertation extended the findings from previous research by considering how the combination of task

cohesion and descriptive norms would relate to individual athlete effort. The results of that study revealed that both constructs accounted for unique variance in the prediction of individual effort. That finding, along with the two youth sport studies reporting positive, independent relationships between each of these group constructs and individual effort (Spink, Crozier, et al., 2013; Study 1), reinforces the potential import of cohesion and descriptive norms in furthering our understanding of young athletes' effort.

4.1.1 Limitations of Previous Research

To date, all of the studies examining these group constructs in relation to individual effort have been observational field-study designs. One limitation of a reliance on observational field studies is that sport researchers are unable to make cause-effect inferences about how social constructs may *influence* individual sport behaviours (such as effort; Hagger & Chatzisarantis, 2009). As the conceptual frameworks for both cohesion (Carron, 1982) and descriptive norms (Cialdini et al., 1990) specify that one's perceptions about the group (team) may influence individual cognitions and behaviour (Turner, 1991), the ability to make causal inference about the potential influence of cohesion and norms on young athletes' effort is important.

4.1.2 Extensions to Previous Research

Although there have been numerous studies examining group phenomena in adult sport teams (Prapavessis & Carron, 1997b; Spink, 1990, 1995; Spink, Nickel, Wilson, & Odnokon, 2005), research investigating how group constructs may influence individual athlete behaviour in the youth sport domain is limited, by comparison. To this researcher's knowledge, only two studies to date (Spink, Crozier, et al., 2013; Study 2) have considered team cohesion and descriptive norms independently in relation to athlete effort within the youth sport context. Although the results of those studies were consistent in revealing a positive relationship between these constructs and individual effort, there are a number of possible research directions that could be pursued to advance this emerging literature. The present study sought to extend that work in three ways.

First, this study built upon previous research that has reported positive relationships between cohesion and descriptive norms, and individual effort, by testing those relationships experimentally. Researchers in other areas (e.g., Klein, Shepperd, Suls, Rothman, & Croyle, 2014; Spink, Crozier, et al., 2013; Studies 1 and 2) have suggested that using varying methodological approaches (e.g., different study designs) can offer greater insight into one's

research questions. Although it is recognized that the results of a single experimental study are not sufficient to make definitive claims about causal effects, they would, in combination with other studies, provide converging evidence about how perceptions about teammates may potentially influence individual athlete effort (e.g., Hagger & Chatzisarantis, 2009; Klein et al., 2014).

Second, this study used a vignette manipulation of the two group constructs of interest (cohesion and descriptive norms) to elicit differential effects on individual effort. Although more common in qualitative sport research (Hagger & Chatzisarantis, 2009; Mâsse, Dassa, Gauvin, Giles-Corti, & Motl, 2002), vignettes also can be a powerful technique within experimental study designs to causally affect individual responses (e.g., judgments, intended behaviours) about presented hypothetical scenarios (Atzmüller & Steiner, 2010). Vignettes have been used to manipulate specific aspects of the team in previous sport research with adults, and were found to be effective in influencing other individual participation-related outcomes (i.e., intention to return; Spink, Ulvick, McLaren, Crozier, & Fesser, 2015).

Third, this study was conducted with a separate sample of young athletes. By intentionally targeting older-adolescent volleyball players, the shift in focus to an older sample of adolescent athletes and a different sport type was done to improve the generalizability of the findings reported in Studies 1 and 2 of this dissertation (Klein et al., 2014).

4.1.3 Study Purpose

Using an experimental vignette manipulation, the purpose of this study was to examine how varying levels of task cohesion (high versus low) and descriptive norms for teammate effort (high versus low) would influence individual self-reported athlete effort.

4.1.4 Hypotheses

Based on the previous research in youth sport examining the relationship between task cohesion and descriptive norms, and individual athlete effort (Spink, Crozier, et al., 2013; Studies 1 and 2), it was predicted that both group constructs would positively influence athletes' self-reported effort levels. While it is possible that cohesion and norms together might result in an additive effect, no findings to date support this speculation. Thus, no hypothesis was generated about how the combination of the two group constructs would impact effort.

4.2 Methods

4.2.1 Participants and Design

The sample was comprised of 55 females who were participating in a one-week summer volleyball camp. They ranged in age from 15 to 17 years, with an average age of 15.4 years ($SD = .6$). Participants reported having played volleyball for approximately 4.5 years ($SD = 1.9$). When asked about the highest level of volleyball they had played, 30 athletes (54.5%) identified the “high school” level and 25 athletes (45.5%) identified the “club” level. This study used a 2X2 between-subjects factorial design, which will be described in the vignette manipulation section that follows.

By way of explanation, the inclusion of only female athletes in this study was unintentional. The original intent was to include both male and female athletes. However, the boys’ volleyball camp was cancelled at the last minute, so this convenience sample resulted in only females being included.

4.2.2 Procedure

After institutional ethics approval was granted, permission was obtained from camp organizers to recruit participants from three 5-day university summer volleyball camps. On the first day of each camp, an informational letter was sent home with participants about the study (see Appendix F).

Three days into each of the camps, the researcher and two research assistants made scheduled visits to seek campers’ involvement in the study. These visits, which lasted approximately 10 minutes, involved describing the purpose and procedures of the study (see script; Appendix G) and obtaining informed consent from interested individuals. As every camper in attendance agreed to participate, they were then administered the vignette manipulation and study measures.

Vignette manipulation. Participants were randomly assigned to read one of four vignettes that depicted volleyball teams varying in their degree of task cohesion and descriptive norms for player effort (i.e., high cohesion/high norms, high cohesion/low norms, low cohesion/high norms, and low cohesion/low norms). While imagining themselves as a member of the hypothetical team described, participants were asked to respond to a series of questions about how hard they would work if they were a member of that team.

The four vignettes are presented in Appendix H. The content of the vignettes was generated based on the constitutive definitions of task cohesion (Carron et al., 1998) and descriptive norms (Cialdini et al., 1991). For example, players on more cohesive teams were described as being very close, working well together, and being on the same page about team goals. In comparison, players on less cohesive teams were described as not having the opportunity to get to know each other, not working well together, and not all being on the same page with respect to team goals.

Similarly, in line with the idea that descriptive norms reflect perceptions about others' behaviour, teams with a high descriptive norm for effort depicted most players (90%) working as hard as they could, both in practice as well as game situations. In comparison, teams with a low descriptive norm for effort depicted few players (10%) working as hard as they could in practice as well as game situations. Differentiating low and high descriptive norms groups in this way was consistent with previous work examining descriptive norms in the activity setting (Priebe & Spink, 2014). While the plausibility of such extreme groups in a real-world sport context could be questioned, the results of Study 2 suggested that some youth sport athletes hold descriptive norm perceptions in line with those described in the current vignettes (e.g., 90%).

To ensure that the vignette content was developmentally appropriate for the adolescent participants, readability statistics were calculated using Microsoft Word for each of the team descriptions. These assessments revealed that all of the vignettes were at an appropriate reading level for this age group (i.e., grade 6 to 7 across each of the 4 vignettes).

Pilot testing. To ensure that the vignettes were clearly worded and would make sense to the adolescent participants, pilot testing was conducted before the current study began with a separate sample of young female athletes ($n = 16$). As these individuals had participated on a sport team in the past and were attending another university sport camp (basketball), it was felt that they would be similar to the participants in the present study. Those involved in the pilot testing indicated that the vignettes were clearly written and easy to understand. However, two suggestions were made to enhance the distinctiveness of the constructs. Specifically, the phrases describing high/low levels of cohesion and descriptive norms were bolded and a space was added between the descriptions of cohesion and descriptive norms to help participants differentiate between the two constructs (see Appendix I).

4.2.3 Measures

Perceived effort. While imagining themselves as a member of the hypothetical team described in the vignette, participants indicated their agreement with six statements describing how hard they would work on that team. This measure of effort has been used in previous sport studies with both adults (Spink, Wilson, et al., 2013) as well as youth (Spink, Crozier, et al., 2013; Studies 1 and 2). To reflect the fact that participants were responding to a hypothetical scenario, slight wording adjustments were made to the scale items to reflect intended behaviour rather than past behaviour. For example, instead of “I worked as hard in practice as I do in competition”, the item was reworded as, “I would work as hard in practice as I do in competition”. All items were assessed on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). The Cronbach’s alpha for the scale was .92.

Manipulation checks. Participants also responded to additional questions to assess a) their ability to imagine the team described, and b) their understanding and recall of the content of the vignettes (i.e., whether cohesion and descriptive norms were present at high or low levels). These questions are presented in Appendix I, which includes the entire survey that participants completed (i.e., demographic questions, vignette manipulation, and measures).

4.2.4 Data Analysis

A two-way between-subjects factorial analysis of variance (ANOVA) was used to test for differences in participants’ effort ratings across the four vignette conditions. The two independent variables were cohesion (high vs. low) and descriptive norms (high vs. low), and the dependent variable was individual perceived effort. A significant *F*-value on the ANOVA was followed with post-hoc comparisons of the group means, and appropriate effect sizes using Cohen’s *d* were calculated (Tabachnick & Fidell, 2007).

4.3 Results

4.3.1 Preliminary Analyses

Prior to conducting the main analysis, data were screened within each group for outliers and the assumptions of ANOVA were examined (e.g., normality, linearity, and homogeneity of variances; Tabachnick & Fidell, 2007). Although there were no outliers (i.e., all *z* scores < 3.29), the self-reported effort scores were negatively skewed across three of the four conditions. To correct the skewness, a reflect-logarithmic transformation was conducted (Tabachnick & Fidell,

2007). However, as the results did not differ across the raw and transformed data, results from the raw data are reported for ease of interpretation.

4.3.2 Manipulation Checks

Before conducting the main analysis, responses to the manipulation check questions were examined. Mean scores capturing participants' ability to imagine the described team ranged from 5.1 to 5.9 (on a 7-point scale) across the four vignette conditions. In addition, a one-way ANOVA revealed no differences in participants' ability to imagine the descriptions portrayed across the four vignettes ($p > .05$).

Although those results provided confidence that participants could imagine their described teams, participants also needed to accurately recall the correct levels of cohesion and descriptive norms (i.e., high vs. low) from their respective team descriptions to be included in the main analysis. With respect to participants' accuracy in recalling this information, one participant (from the low cohesion/high norms condition) incorrectly recalled the cohesion level and two participants (from the high cohesion/high norms and high cohesion/low norms conditions) incorrectly recalled the descriptive norm levels. The individuals who had incorrectly recalled their team descriptions ($n = 3$) were removed from the main analysis. The final cell sizes for each condition were as follows: high cohesion/high norms ($n=14$), high cohesion/low norms ($n=14$), low cohesion/high norms ($n=12$), and low cohesion/low norms ($n=12$).

4.3.3 Main Analysis

Two-way ANOVA results revealed main effects for cohesion, $F(1, 48) = 7.3, p = .009$, as well as descriptive norms, $F(1, 48) = 4.2, p = .05$. However, the interaction between cohesion and norms was not significant, $F(1, 48) = .31, p = .6$. Table 4.1 contains the means across the four vignette conditions.

Table 4.1 Participants' reported effort levels across the four vignette conditions

	High Norms	Low Norms	Total
High Cohesion	$M = 6.8 (SD = .30)$	$M = 6.5 (SD = .47)$	$M = 6.6 (SD = .42)$
Low Cohesion	$M = 6.3 (SD = .75)$	$M = 5.7 (SD = 1.4)$	$M = 6.0 (SD = 1.1)$
Total	$M = 6.5 (SD = .59)$	$M = 6.1 (SD = 1.0)$	$M = 6.3 (SD = .87)$

The main effects were examined by comparing the mean scores across the high and low groups of each variable. Participants who read about a team described as highly cohesive reported that they would work significantly harder on that team ($M = 6.6$, $SD = .42$, 95% CI [6.3,6.9]) than those whose team was described as less cohesive ($M = 6.0$, $SD = 1.1$, 95% CI [5.7,6.3], Cohen's $d = .72$). The Cohen's d estimation of effect size indicated that cohesion had a medium-to-large effect (large effect sizes are represented by Cohen's d values $>.8$).

Similarly, participants who read vignettes where the team was described as having higher descriptive norms for effort rated their individual effort levels higher ($M = 6.6$, $SD = .59$, 95% CI [6.2,6.9]) than those whose team displayed lower descriptive norms ($M = 6.1$, $SD = 1.04$, 95% CI [5.8,6.4], Cohen's $d = .49$). Based on Cohen's d recommendations, descriptive norms had a medium effect. Similar to the findings of the previous correlational study, the Cohen's d results suggested that cohesion appeared to have a stronger influence on self-reported player effort than descriptive norms for teammate effort.

4.4 Discussion

This study extended previous youth sport studies (Spink, Crozier, et al., 2013; Studies 1, 2) by testing the effects of varying levels of cohesion and descriptive norms for effort on individual self-reported athlete effort using an experimental vignette manipulation. Results indicated that participants' self-reported effort levels could be positively influenced by manipulating both a hypothetical team's levels of cohesion and descriptive norms for teammate effort.

That cohesion positively influenced participants' responses regarding their individual effort extends the correlational findings from Studies 1 and 2 of this dissertation. Those observational studies revealed a positive relationship between task cohesion and effort. Although this was the first study with youth athletes to demonstrate that hypothetical teams with varying levels of cohesion could differentially influence intended individual effort, recent research using a similar vignette protocol with adults also reported that perceptions about the group influenced players' intended participation (intention to return) with the team (Spink et al., 2015). This initial experimental study provides preliminary evidence that perceptions of cohesion may have a causal influence on the expression of individual athlete effort.

A second important finding from this study was that the level of descriptive norms about teammates' effort positively influenced how hard participants reported that they would work if

they were members of their described team. This result extends previous research examining descriptive norms in youth sport. Taken together with previous findings (Spink, Crozier, et al., 2013; Study 2), the results of the current study offer additional support for the impact of descriptive norms as perceived by members of youth sport teams.

4.4.1 Study Strengths

A notable strength of this study was its experimental methodology. Although Hagger and Chatzisarantis (2009) have argued for sport psychology researchers to employ more robust study designs (e.g., carefully-controlled randomized experimental methods), most of the sport studies to date examining group constructs such as cohesion and descriptive norms have been cross-sectional in nature (e.g., Spink, Crozier, et al., 2013; Study 1). Only recently have researchers begun to explore these group constructs within the youth sport domain using correlational study designs to address first-generation research questions (e.g., presence of a relationship; Zanna & Fazio, 1982). However, a next step in improving our understanding of these constructs relies on testing whether the causal influence suspected on the basis of correlational results will be experimentally demonstrated. As the results of this study indicated, both cohesion and descriptive norms influenced individual athlete effort in ways that were forecasted by past correlational field research.

One caveat to the specific type of experimental design used here (i.e., between-subjects design) is that the results also may have captured some confounding variable effects such as possible pre-existing differences between participants (e.g., differing propensities for working hard, irrespective of team characteristics; Mitchell & Jolley, 2013). Though a within-subjects design would have better addressed this issue by having participants serve as their own controls, the strategy of requiring individuals to read about and respond to all four team descriptions would have been considerably more burdensome on these adolescent participants (Keppel & Wickens, 2004). Further, it also is possible that some participants might have been confused by the varying information if presented with the information from the four vignettes consecutively, and within a short time span. As only 3 participants in this study (5%) erred in recalling the correct level (high vs. low) of cohesion for the norms described in the vignette, the use of the between-groups design appears to have addressed this latter concern.

A second strength of this study pertains to its strong conceptual basis. The vignettes were crafted so that the team descriptions would specifically capture the accepted conceptualizations

of both cohesion and descriptive norms (Carron et al., 1998; Cialdini et al., 1990). As previous studies have used these conceptualizations to examine the link between these group constructs and individual effort (Spink, Crozier, et al., 2013; Studies 1 and 2), it was considered important to stay rooted within a similar conceptual framework in order to build upon that work.

A third strength of this study was that study methods were pilot tested. Although vignettes are often used in qualitative physical activity research (Mâsse et al., 2002), their use in experimental study designs within the activity setting is less common. Thus, pilot testing the vignettes and corresponding measure of effort was conducted to ensure that participants found the vignettes and survey questions to be clearly worded and make sense. An ancillary benefit of the pilot testing was that it also provided an initial indication about the distinctiveness of participants' responses across the different team descriptions.

4.4.2 Study Limitations

One limitation of this study involves how descriptive norms were characterized in the team descriptions. Specifically, teammates' effort levels were depicted as a generalized level of effort. As a result, it is difficult to ascertain exactly what readers were imagining as they read about the described team's descriptive norm for teammate effort. Future studies using vignettes to manipulate descriptive norms in this way may benefit from focusing on specific instances where player effort is (or is not) demonstrated in relation to the task demands. For example, it might be helpful to describe a specific practice or game scenario where the task demands are such that players are required to put forth a high level of effort in order to perform the task successfully.

A second limitation of the vignette-based approach concerns the inability to generalize findings to real-world sport teams. One reason may relate to the possible equivalence of the vignettes. As noted in Table 4.1, there was more variability in some scenarios than others, thus calling into question the appropriateness of comparing the scenarios. Further, when reading the vignettes, participants may evaluate hypothetical scenarios differently than real-life situations, in part because the stakes are not as real (e.g., participants who reported high levels of effort do not actually have to work hard) and also because these imagined scenarios are simplified representations of the actual team sport context (Hughes & Huby, 2004). This may be part of the reason why participants tended to respond on the higher end of the scale across all four vignette conditions when describing how hard they would work as a member of the described team.

Although medium-to-large effect sizes emerged, the practical meaningfulness of these effects could be questioned given this overall tendency to rate effort levels high. However, these concerns with a possible lack of equivalence or lack of practical meaningfulness are tempered by the fact that studies conducted in real-world settings have reported similar results with actual sport teams (Spink, Crozier, et al., 2013; Study 2). Although this was the first sport study to manipulate descriptive norm information using vignettes, they have been used in other research areas to experimentally examine the impact of varying levels of descriptive norms on individual outcomes (e.g., Zikmund-Fisher, Windschitl, Exe, & Ubel, 2011).

A third limitation also relates to the generalizability of study findings. As this sample was exclusively older-adolescent female volleyball players attending a sport camp, results should be considered within the purview of this age group and sport context. Focusing on a single sport was done intentionally to control for possible contextual differences that may exist across sport settings (e.g., team size, degree of interdependence). Further, as this study relied upon participants' capacity to imagine themselves on a hypothetical team, and sport contexts vary considerably (e.g., structure of task and practice/performance settings; Evans et al., 2012), including athletes from a variety of sport types may have potentially introduced additional variability (error).

In terms of the age of participants, cognitive development experts have found that higher executive functions, such as abstract thinking capabilities, develop in early- to mid-adolescence (Steinberg, 2005). Thus, targeting individuals in later adolescence increased confidence in participants' ability to imagine a hypothetical team and make judgments about how they would behave in that imagined scenario. Participants in this study were more than two years older, on average, than those in Studies 1 and 2 (15.4 years in this study, compared to 13.3 years in the previous two studies). Although it is unclear whether a scenario-based experimental methodology would be equally successful and elicit similar results with a younger sample, current results were consistent with previous correlational research with young adolescents. In Study 2, it was reported that perceptions of team cohesiveness and descriptive norms surrounding teammate effort were both positively associated with individual athlete effort.

4.4.3 Future Directions

Few studies have investigated team cohesion and descriptive norms in relation to individual effort in youth sport, and this study was the first to use an experimental vignette-based

approach with young athletes. Thus, a number of directions emerge for future research in this area.

Extension to other samples. As this study focused on females, it would be helpful to consider how varying perceptions of group cohesion and descriptive norms might influence individual effort in male athletes. Previous studies that have examined group constructs with adult sport samples have shown that perceptions of the group may relate differently to individual outcomes across males and females (Spink, 1995; Spink et al., 2010). Whether similar differences would emerge in youth samples remains to be seen.

Extension to other sport types. Another potential moderator worth considering is sport type. This study, conducted with volleyball players, found that both cohesion as well as descriptive norms had significant effects on individual athletes' reported effort. However, owing to the fact that different task structures exist across different team sports, it would be helpful to clarify how the effects of cohesion and descriptive norms also may vary across sport settings. For example, it is possible that these group constructs might differentially influence athletes within interdependent sport teams (e.g., volleyball, soccer) as compared to individual-sport athletes (Evans et al., 2012). This speculation awaits further investigation.

Extension to actual intact teams. Although the use of hypothetical sport teams satisfied the 2x2 study design by featuring teams with varying combinations of both high/low cohesion and descriptive norms, future research is needed to explore how these constructs may influence young athletes' actual effort levels in real-world sport teams. One possible way of manipulating both group factors is through team building (TB). TB strategies have been used with success across a number of activity settings to manipulate perceptions of the group (Bruner & Spink, 2010; Martin, Carron, & Burke, 2009).

Although TB's effectiveness has not been studied in youth sport teams, research from the activity area suggests that TB may be a promising approach for manipulating both of the group constructs that were examined in this study. In their research with adolescent exercisers, Bruner and Spink found that an established TB protocol (Carron & Spink, 1993) was effective in increasing perceptions of the presence of team norms (e.g., 2010) as well as team cohesiveness (2011). Although they captured team norms more broadly than how it was conceptualized in the current study (i.e., perceptions of teammates' actual behaviour), it is plausible that TB also could have an effect on descriptive norms.

Examination of task and social cohesion. Given its exploratory nature, this study purposely adopted a broad conceptualization of cohesion that did not distinguish between the different facets of cohesion. However, considering how cohesion has been conceptualized and operationalized in youth sport (Eys et al., 2009a, 2009b), it might be informative to consider how task and social cohesion may differentially influence individual athlete effort.

Overall, the results of this study extend previous correlational work by providing experimental evidence that group factors, such as athletes' perceptions about team cohesion and about teammates' effort levels, may influence individual athlete effort in youth sport. Although the vignette-based approach offered a novel way of manipulating these group constructs, field experiments with intact youth sport teams are warranted as a way to corroborate the current findings.

4.5 Bridge to Study 4

This study, as well as Study 2, examined the combination of cohesion and descriptive norms in relation to athlete effort. In addition to studying the combined impact of cohesion and other group constructs (e.g., norms) on individual participation, it also would be helpful to identify why perceptions of team cohesion were related to individual participation in Study 1. This line of research, which involves considering potential mediators in the cohesion-participation relationship, formed the basis of the next study. Identifying mediating variables in a relationship provides valuable information for theory development as well as intervention design (cf. Frazier, Tix, & Barron, 2004). Specifically, the purpose of Study 4 was to examine the plausibility of social support as one possible mediator explaining the relationship between cohesion and the two participation outcomes that emerged in Study 1 (effort and intention to return).

CHAPTER 5

STUDY 4: SOCIAL SUPPORT AS A POSSIBLE MEDIATOR OF THE COHESION-PARTICIPATION RELATIONSHIP IN YOUTH SPORT

5.1 Introduction

The conceptual definition of cohesion that has been widely adopted by sport researchers recognizes cohesion as the “tendency for a group to stick together and remain united in pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron et al., 1998, p. 213). Not only does this definition imply a connection between cohesion and individual participation with the group, but research also supports an empirical link between the two constructs. Independent studies with adult athletes have reported positive associations between perceptions of cohesion and participation-related outcomes such as effort (Prapavessis & Carron, 1997a) and intention to return (Spink, 1995).

Study 1 of this dissertation sought to extend the cohesion-participation relationship to the youth sport domain using a multivariate approach. Consistent with what had been reported previously with adults (Prapavessis & Carron, 1997a; Spink, 1995), the results from Study 1 indicated positive relationships between cohesion and athletes’ reported effort as well as their intention to return to the team in the future.

5.1.1 Exploring Potential Mediators

The Study 1 finding that young athletes’ perceptions of cohesion were related to their team participation was an important first step in establishing that the relationships found previously with adults could be extended to a youth sample. A next step in gaining further understanding of the cohesion-participation relationship with youth athletes involves considering *why* this relationship might exist (Zanna & Fazio, 1982). For example, why were athletes who held higher perceptions of team cohesiveness more likely to report working hard (Study 1)? Similarly, why did perceptions about task cohesion relate to athletes expressing greater intention to return to the team in the future (Study 1)? Questions such as these involve identifying potential mediating variables. Elucidating the variables that might mediate the cohesion-participation relationship not only has the potential to inform our understanding of the construct of cohesion (e.g., possible consequences of cohesion; Baranowski, Anderson, & Carmack, 1998), but also could aid in the design of more effective group-based interventions for promoting youth sport participation (cf. Frazier et al., 2004).

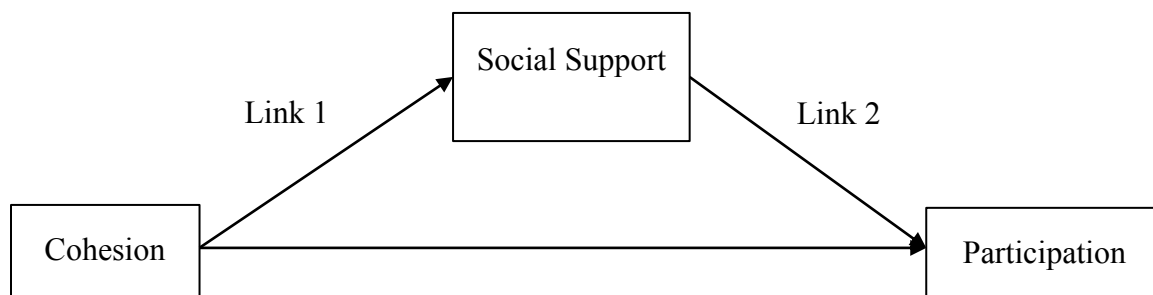
5.1.2 Social Support as a Possible Mediator

One potential mediator of the relationship between cohesion and individual participation is social support. Social support refers to an individual's perceptions about the tangible or intangible resources that are available from others (Shumaker & Brownell, 1984). While social support could emerge from multiple channels within the sport domain (e.g., coach, parent, teammates; Sheridan, Coffee, & Lavalley, 2014), most studies have tended to focus on the coach as the most important support provider (e.g., Jõesaar, Hein, & Hagger, 2012). However, one's teammates also are essential contributors to the social environment of a team (Ntoumanis, Vazou, & Duda, 2007) and may provide many forms of support, including technical or informational feedback, verbal encouragement, and tangible assistance (Sheridan et al., 2014). Not surprisingly, the specific forms of support that come from teammates tend to be task-related, and are often tied to sport-specific needs (e.g., technical or tactical feedback; Rosenfeld, Richman, & Hardy, 1989).

The suggestion that social support may be one possible mediator has both a conceptual underpinning as well as an empirical rationale. Conceptually, cohesion is defined by the extent to which team members are "... united in the pursuit of [their] instrumental objectives ...” (Carron et al., 1998, p. 213). One potential consequence of this increased coherence around group goals is that team members may be more likely to interact and communicate with each other in ways that support the attainment of these goals (e.g., encouragement, tangible assistance, etc.). Thus, through these positive interactions, it follows that players may come to hold increased perceptions about the support that may be available from their teammates.

Empirically, studies in the activity area have demonstrated independent relationships between both of the intermediate links in this possible mediating relationship, as outlined below.

Figure 5.1 Intermediate links of the cohesion-participation relationship



Cohesion and social support. In terms of the connection between cohesion and social support, this relationship has been reported in the broader activity area (Fraser & Spink, 2002) as well as within the youth sport context (Westre & Weiss, 1991). For example, individuals who reported more cohesiveness in an activity setting also reported increased perceptions of select forms of social support (Fraser & Spink, 2002).

Social support and participation. With respect to the second link in the mediating relationship, social support also has been empirically related to sport team involvement. In a study examining social support in relation to activity participation, Saunders et al. (2004) found that perceptions of social support were positively associated with the number of organized sport teams on which an adolescent played. Another study identified teammate support as having an inverse association with athlete burnout (DeFreese & Smith, 2013), something that could presumably lead to sport dropout. Finally, the results from a qualitative study revealed that athletes identified the supportive relationships they had with teammates as being critical to their participation in sport (Bruner, Munroe-Chandler, & Spink, 2008).

5.1.3 Study Purpose

Considering both the empirical evidence connecting cohesion, social support, and sport participation, as well as the intuitive reasoning for why social support may mediate this relationship, the purpose of this study was to explore social support as a potential mediator in the prospective relationship between task cohesion and two participation-related outcomes in youth sport.

As this study comprised the same sample of participants that were examined in Study 1, the decision to focus on task cohesion (rather than social cohesion) was based on the fact that it was task cohesion that emerged as a predictor of the criterion variables in that investigation. Two participation-related outcomes selected for the current study were effort and intention to return, as these outcomes were those significantly related to task cohesion in Study 1.

5.1.4 Hypotheses

Based on previous research, it was expected that positive links would emerge between cohesion and social support (Fraser & Spink, 2002) as well as between social support and both effort and intention to return. It also was hypothesized that social support would emerge as a significant “mediator” in the cohesion-participation relationship (cf. Baron & Kenny, 1986). To be clear, however, the correlational design of this study precluded a direct test of mediation.

Rather, the intent here was to explore the plausibility that a meditational relationship could be present and, if identified, be tested in future research.

5.2 Methods

5.2.1 Participants

Participants included the same sample of youth soccer players with complete data ($N = 130$) examined in Study 1 (see Chapter 2).

5.2.2 Procedure

This study used a prospective, observational design. As described in Study 1, data were collected via pencil and paper questionnaires at two separate time points. The first data collection occurred within the first two weeks of the season at a regular team practice. During this visit, participants reported on their perceptions of team cohesion.

Within the last 1-2 weeks of season-end, the researcher made a second team visit, during which participants reported on their perceptions of social support and intention to return to the team in the future. As noted previously, Appendix D includes all of the measures used across both survey time points.

5.2.3 Measures

This study used the same measures for cohesion (Time 1), self-reported effort (Time 2), and intention to return (Time 2) as described in Chapter 2. The Cronbach's alpha value for the task cohesion subscale of the YSEQ was .90, and for both self-reported effort and intention to return measures, it was .84.

The addition to this study involved the measure of social support, whose description follows.

Social support. Perceptions of social support were assessed during the second team visit using an adapted version of the Social Provisions Scale (SPS; Cutrona & Russell, 1987). Specifically, the three subscales that were deemed most relevant to the youth sport context were used: reliable alliance (assurance that others can be relied upon in challenging times), reassurance of worth (recognition of one's competence), and social integration (sense of belonging).

Each social provision was assessed using four items (two positively-worded items and two negatively-worded items), which measured respondents' agreement with a statement using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Although the original SPS utilizes

a 4-point rating scale, the adjustment to a 7-point rating scale for the present study was made in order to maximize the variability in participants' responses, with a view to improving the scale's reliability (e.g., internal consistency; Preston & Colman, 2000). The modified version of the SPS used in this study is presented in Appendix J. The alpha value for the modified scale was .88.

As done in other sport studies (e.g., DeFreese & Smith, 2013), the 12-items were collapsed to reflect a one-dimension scale. In addition to Weiss's (1974) suggestion that the provisions are conceptually related, there is no empirical evidence to suggest that the relationships that might emerge across the subscales would be different. Further, using a collapsed 12-item scale rather than multiple 4-item subscales also increased the potential for improved scale reliability (Marsh, Hau, Balla, & Grayson, 1998).

5.2.4 Data Analysis

Data screening. The items representing the variables of interest (task and social cohesion, social provisions, and the two participation outcomes) were screened for potential errors in data entry and missing values. Also, the assumptions of linearity, normality, and homoscedasticity were examined by visually inspecting the distribution of the variables using histograms, as well as by analyzing the skewness and kurtosis values across each variable.

These assumptions were checked and reported for cohesion and the participation variables in Study 1. In terms of the social provisions variable, there were no violations of the assumptions, nor were there any outliers.

Main analysis. The plausibility of social support as a mediator of the cohesion-participation relationship was tested across two participation outcomes – effort and intention to return. Baron and Kenny's (1986) approach for assessing mediation using regression analyses was used for each participation outcome separately. A path diagram illustrating the relationships that were tested is presented in Figure 5.2.

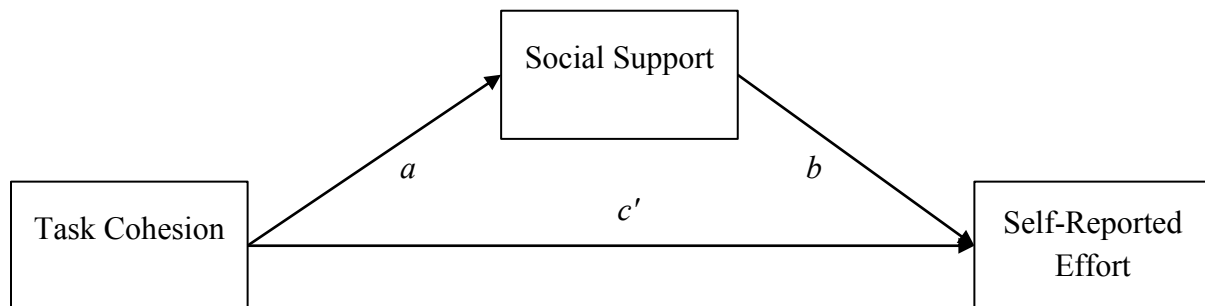
The first regression analysis tested the relationship between task cohesion and social support (path *a*). The second regression examined the relationship between cohesion and the participation outcome (path *c*). Based on Study 1 findings, this relationship was expected to be significant across both outcomes. However, as the results from that investigation emerged from a multivariate analysis (i.e., canonical correlational analysis), this step was necessary to establish the univariate links between task cohesion and each participation outcome.

The third regression involved examining the relationship between social support and each participation outcome, while controlling for any possible covariation between social support and cohesion (path b). This involved entering both cohesion and social support into a regression equation predicting each participation outcome.

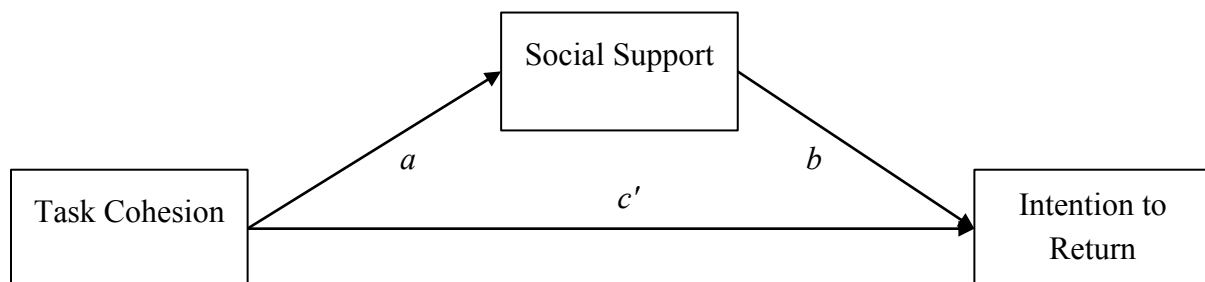
Finally, assuming that the relationships that emerged from those three regression equations were significant, then the relationship between task cohesion and each participation outcome was re-examined in the third regression (path c'). To establish possible mediation, the strength and significance of the direct relationship between cohesion and participation in the third regression would need to be less than the indirect relationship in the second regression.

Figure 5.2 A path diagram depicting the relationships to be examined between task cohesion, social support, and participation

a) Effort as the participation outcome



b) Intention to return as the participation outcome



Across both participation outcomes, Sobel's (1982) method for estimating the significance of the indirect relationship between cohesion and participation via support also was tested.

5.3 Results

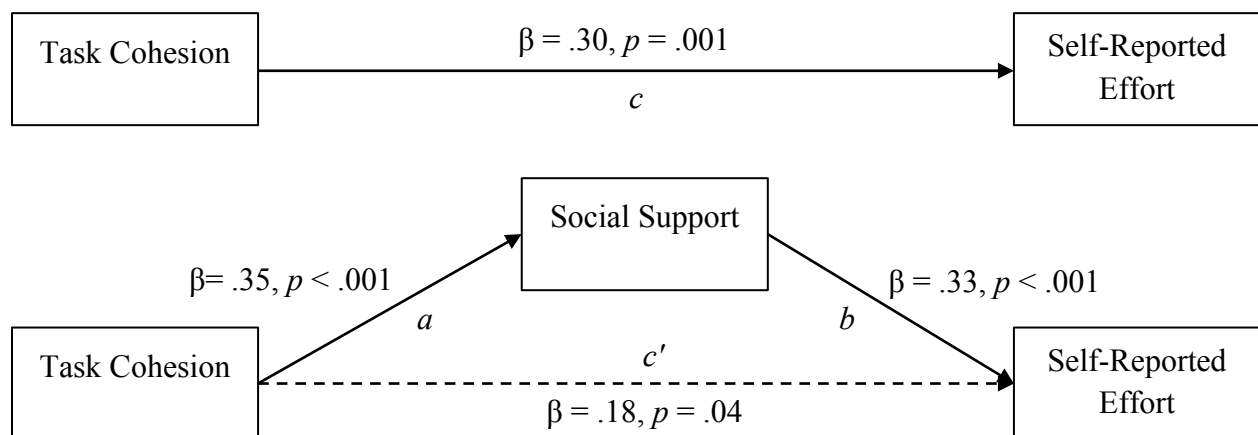
5.3.1 Evaluation of Assumptions

All of the assumptions were met with respect to linearity, normality, and homoscedasticity. Examination of the correlations between the variables of interest revealed that all were significantly related, moderate in size, and the strength of the cohesion/social support relationship was similar to both of the social support/participation relationships prior to testing for mediation.

5.3.2 Main Analysis

Self-reported effort. The analyses conducted for the effort outcome revealed that all of the relationships necessary to establish the plausibility of mediation were satisfied (Figure 5.3). In the first equation, task cohesion was significantly related to social support, $F(1, 123) = 17.6, p < .001$ ($\beta = .35, p < .001$), accounting for 12.5% of the total variance in social support. In the second equation, task cohesion was significantly related to participants' self-reported effort, $F(1, 120) = 11.8, p = .001$ ($\beta = .30, p = .001$), accounting for 9.0% of the total variance. In the third equation, both task cohesion ($\beta = .18, p = .04$) and social support ($\beta = .33, p < .001$) were significantly related to self-reported effort, $F(2, 119) = 13.6, p < .001$, accounting for 18.6% of the total variance.

Figure 5.3 A path diagram depicting the relationships between task cohesion, social support, and self-reported effort

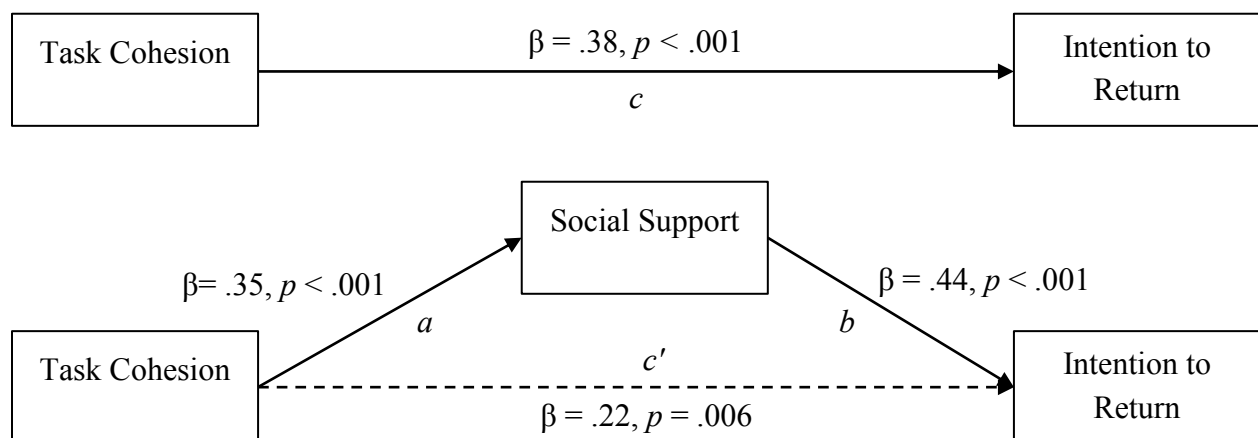


Note. Although causality cannot be inferred, the unidirectional arrows represent the hypothesized causal links between the variables

Although cohesion was still significantly related to individual effort in the third equation, the beta weight and significance level ($\beta = .18, p = .04$) were lower than in the second equation ($\beta = .30, p = .001$). A Sobel's test, which tests the significance of the reduction in cohesion's "effect" on effort after including the mediator (social support), also was significant ($p = .002$). Together, these findings suggest that social support would be best classified as a "partial mediator" (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) of the task cohesion-effort relationship.

Intention to return. Similar to the effort outcome, the analyses conducted for the intention to return outcome revealed that all of the relationships necessary to establish the plausibility of mediation were satisfied (Figure 5.4). As mentioned previously, the first equation revealed that task cohesion was significantly related to social support, $F(1, 123) = 17.6, p < .001$ ($\beta = .35, p < .001$), accounting for 12.5% of the total variance. In the second equation, task cohesion was significantly related to participants' intention to return to the team, $F(1, 123) = 20.8, p < .001$ ($\beta = .38, p < .001$), accounting for 14.5% of the total variance. In the third equation, both task cohesion ($\beta = .22, p = .006$) and social support ($\beta = .44, p < .001$) were significantly related to intention to return, $F(2, 122) = 28.1, p < .001$, accounting for 31.5% of the total variance.

Figure 5.4 A path diagram depicting the relationships between task cohesion, social support, and intention to return



Note. Although causality cannot be inferred, the unidirectional arrows represent the hypothesized causal links between the variables

The beta weight and significance level values for cohesion were lower in the third equation ($\beta = .22, p = .006$) as compared to the second equation ($\beta = .38, p < .001$), and the Sobel's test of the indirect effect also was significant ($p < .001$). These results suggest that, similar to effort, social support would be classified as a "partial mediator" explaining the relationship between task cohesion and intention to return.

5.4 Discussion

The main goal of this study was to begin to explore a potential explanation for why cohesion may be connected to individual participation in the youth sport domain. Based on previous research that has identified social support as being related to both cohesion (Fraser & Spink, 2002) as well as sport participation (Saunders et al., 2004), this study examined the plausibility of social support as a mediating variable of the cohesion-participation relationship. Using prospective data, the intermediate links between cohesion, social support, and two participation outcomes were examined. As hypothesized, all of the conditions for mediation (partial) were satisfied across both participation outcomes.

The first noteworthy finding in this study was the emergence of a relationship between cohesion and both participation outcomes - self-reported effort as well as intention to return to the team in the future. Although the multivariate analysis conducted with the same sample of athletes in Study 1 revealed a similar finding, there were two reasons why it was important to re-examine the univariate relationships between those variables for the current study. First, one of the steps in testing for mediation involves establishing the presence of a significant relationship between the independent (X) and dependent (Y) variables of interest. Second, the strength (i.e., beta coefficient) and significance level of the univariate X-Y relationship serve as an important statistical comparison in the process of testing for mediation (Baron & Kenny, 1986). Beyond the statistical importance of finding that task cohesion was independently related to both effort and intention to return, the results also were consistent with previous research with adult athletes that reported similar associations (Prapavessis & Carron, 1997a; Spink, 1995).

With respect to the intermediate links involving social support, results showed that the first link between task cohesion and social support was positive and significant. Specifically, athletes who held higher perceptions of team cohesiveness in the first two weeks of the season were more likely to report higher perceptions of teammate support toward the end of the season (i.e., last two weeks). Although this link lacks an established theoretical underpinning, it makes sense

from a face validity perspective that team members who are more united around team tasks (Carron et al., 1985) would be more likely to support each other in ways to promote the attainment of shared team goals (e.g., encouragement, tangible assistance). Empirically, this finding also is consistent with previous activity research with adults that reported a positive relationship between perceptions of cohesiveness and social support (Fraser & Spink, 2002).

The second link between social support and the two participation outcomes also was positive. In terms of effort, athletes who reported greater perceptions of teammate support also reported working harder in their team setting. Similarly, higher perceptions of teammate support also were associated with participants expressing an increased likelihood of returning to the team in the future. Although previous research has identified social support as a positive correlate of team sport involvement (Saunders et al., 2004), this was the first study to report a link between teammate support and individual participation with that same team.

As a test of the plausibility of mediation, the direct relationship between cohesion and participation also was considered by statistically controlling for social support. Across both participation outcomes, it was found that the relationship between task cohesion and participation was reduced, but not completely diminished, when the shared variance that task cohesion and social support had in predicting sport participation was partialled out. While the partial effects were unexpected, it may not have been entirely surprising considering that single mediator models are not the norm in social psychology research (Baron & Kenny, 1986).

The emergence of social support as a partial mediator prompts the suggestion that other variables also could be helping to explain this relationship (MacKinnon et al., 2002). Another construct that has been associated with both cohesion (Marcos, Miguel, Oliva, & Calvo, 2010) as well as adolescent activity participation (Allison, Dwyer, & Makin, 1999) is self-efficacy. It is possible that feeling more united with team members around team tasks may increase athletes' perceptions about their confidence in performing those tasks, which, in turn, could have positive implications for their participation with the team (e.g., effort, persistence, etc.).

5.4.1 Caveats

Overall, the present findings provide support for the plausibility of social support as a partial mediator of the cohesion-participation relationship in youth sport. It also is worth noting that a number of the criteria described by Frazier et al. (2004) for evaluating mediation using multiple regression were met. For example, the reliability of the social support measure was

high ($\alpha = .88$), all four steps to establish mediation as well as a test of the mediation effect were addressed in the analysis, and the size of the relation between cohesion and social support (path *a*) was comparable to the size of the relation between social support and the two outcomes (paths *b*).

However, as not all of the conditions for testing mediation were met (Frazier et al., 2004), several caveats are worth noting. First, given the correlational study design, a direct test of mediation was not possible. However, this was not a concern as the central aim of the present study was to establish the presence of significant relationships across all the links between cohesion, social support, and participation. In doing so, this study represents an important set-up for future research seeking to examine this meditational relationship more fully (e.g., using experimental designs).

Second, when testing a proposed meditational pathway, measured variables should be temporally distinct across the causal chain (Frazier et al., 2004). As data were collected at two time points only, the temporal sequence was missing between the mediator and dependent variables (social support and the two participation outcomes, respectively). As the intention to return outcome reflected participants' intentions surrounding a *future* return to the team, it might be argued that there was a theoretical sequence present for that outcome. However, because the prospective temporal sequence was missing for the effort outcome, it cannot be determined whether increased perceptions of teammate support led to athletes working harder, or whether working hard resulted in athletes perceiving a greater availability of teammate support. The concurrent measurement of social support and the participation outcomes also may have overestimated the relationship between these two variables, so caution is warranted in interpreting the practical significance of the results.

5.4.2 Study Strength

A strength of this study was the examination of two participation outcomes. As described in Study 1, an athlete's participation with the team can take many forms, including participation during team events (e.g., effort in practices and games) as well as the extent to which participants intend to stay involved with the team in the future (e.g., intention to return). The finding that similar results emerged across both outcomes examined (effort and intention to return) offers additional support for the relationship between social influence factors and various forms of individual participation with the team.

Although the results of the current study are preliminary, they represent the first identification in the youth sport setting of teammate support as a possible mediator of the relationship between individual perceptions of team unity (cohesion) and involvement with the team. Given the importance of peer influences during adolescence (Brown & Larson, 2009), and the relative lack of studies examining team factors, such as cohesion and social support in relation to youth team sport participation, this study offers a first step down a potentially promising line of inquiry.

CHAPTER 6

GENERAL DISCUSSION

Despite the recognized potential benefits of playing sport, maintaining young athletes' involvement in organized sport through adolescence has been an identified challenge (Canadian Heritage, 2013). This dropout issue has been impetus for studies aimed at clarifying factors that may be tied to young athletes' participation (e.g., Keegan et al., 2010; Ullrich-French & Smith, 2009). Beyond considering how to keep youth playing sport through adolescence, researchers and coaches also have sought to understand how to motivate youth to work hard in their team setting (Robinson, 2014; Spink, Crozier, et al., 2013). While there are a number of reasons why youth are involved and work hard in sport, one explanation for which there is a notable dearth of research concerns the potential influence of the group. Although group factors have been implicated in adult sport participation (Prapavessis & Carron, 1997a; Spink, 1995), how these constructs relate in a youth sport setting remains largely unexplored.

To address the existing gap in knowledge about group constructs in youth sport, the series of four studies that comprised this dissertation focused primarily on the relationship between team cohesion and several different indices of individual participation. Study 1 used a multivariate approach to examine the relationship between cohesion and participation-related outcomes in a youth sport sample. Relationships emerged between task cohesion and both effort and intention to return, and these specific variables informed the research questions that featured in subsequent studies. Through the use of complementary study designs (i.e., one field study and one experimental study), the next two studies revealed that individual perceptions about task cohesiveness and the effort levels of teammates (descriptive norms) were positively related to (Study 2), as well as influenced (Study 3), athletes' self-reported effort. Finally, Study 4 offered partial support for social support as one potential mediator of the task cohesion-participation relationship. Positive links were found between cohesion, social support, and both of the participation outcomes that were examined (effort and intention to return).

6.1 Empirical Contributions to the Sport Literature

Taken together, the four studies within this dissertation offered several valuable contributions to the current sport literature.

6.1.1 Extension of the Cohesion-Participation Relationship to Youth Sport

The aforementioned studies were the first to report a relationship between team cohesion and individual participation in the youth sport setting. Although previous research has reported a link between cohesion and several different individual participation outcomes (Carron et al., 1988; Prapavessis & Carron, 1997a; Spink, 1995; Spink et al., 2010), that work has been conducted exclusively with adult athlete samples. While it might be assumed that team factors also would be important for younger athletes, there was still a need to examine this relationship empirically with a youth sample. The results from the current set of studies offered initial support for a positive relationship between perceptions of team cohesiveness and two individual participation outcomes (effort and intention to return) in youth sport. As well, the medium-to-large effect sizes that emerged in the present research were consistent with the cohesion studies that have been conducted with adult athletes (Prapavessis & Carron, 1997a; Spink, 1995).

The finding that task cohesion emerged as the salient factor in relation to participation in Study 1 may speak, in part, to the inherent task nature of sport. Further, as support for this speculation, the majority of participants reported a task-related motive for participating in sport (e.g., skill development, competition, fitness).

However, as Study 1 was the first to examine the cohesion-participation relationship with adolescent athletes, it may be premature to conclude that social cohesion is not a relevant factor in the youth sport setting. Research has found that many youth play sport for social reasons, such as affiliating with others, being part of a team, and making new friends (Gill et al., 1983; Leversen et al., 2012). For athletes with these motives, being on a socially cohesive team may be an important predictor of their current and continued participation with the team. Paradis and Loughhead (2012) found that young athletes who felt more socially cohesive with team members reported greater satisfaction with their team experience, a factor that has been related to sustained sport participation (Fraser-Thomas, Côté, & Deakin, 2008). Thus, for athletes whose motivation for being involved in sport is more social in nature, a stronger connection between social cohesion and individual participation cannot be discounted, especially if performance outcomes also are factored into the equation (Eys et al., 2015).

6.1.2 Support for Other Team-Related Constructs

In addition to establishing the relationship between cohesion and participation, three of the four studies in this dissertation also considered how other team-related constructs might

moderate/mediate this relationship. Studies 2 and 3 examined how athletes' perceptions of their teammates' effort levels, in combination with perceptions of cohesiveness, related to individual effort. Although descriptive norms capturing teammate behaviours have been independently related to individual participation in two previous youth sport studies (Crozier & Spink, 2014; Spink, Crozier, et al., 2013), this team-related construct had yet to be examined together with cohesion in youth sport.

Based on a conceptual rationale (Carron et al., 1985; Cialdini et al., 1991), it was hypothesized in Study 2 that players on more cohesive teams would pay more attention to how hard teammates were working (i.e., increased norm salience) and thus, a stronger descriptive norms-effort would emerge for these athletes. Surprisingly, this hypothesis was not supported, with results revealing significant independent relationships only between both constructs and athletes' self-reported effort. Although team cohesion did not emerge as a moderator of the descriptive norms-individual effort relationship in this study, it was possible that the non-significant interaction was due to a lack of variability in participants' cohesion scores.

To address this question further, Study 3 also examined cohesion and descriptive norms in relation to athlete effort, but using an experimental study design that manipulated the two group constructs. In line with Study 2 results, Study 3 provided additional experimental support for the independent effects of these constructs, as a similar result emerged with a separate sample of volleyball players. The combined findings of these two studies underscored the fact that cohesion and descriptive norms may both be important considerations to continue to study in order to understand youth sport participation.

Finally, Study 4 examined how social support might mediate the cohesion-participation relationship. Results from this preliminary investigation provided evidence that teammate support might be one plausible explanation for how being part of a cohesive team may promote athlete participation. The examination of this idea makes a contribution to the sport literature as these two constructs, though related, have never been examined together in relation to individual participation.

Taken together, the findings that emerged across these four studies present a case for the varying ways that group factors may relate to and influence individual athlete participation within youth sport teams. Whether perceptions about the team's unity, how hard other players

are working, or the availability of support from individuals on the team, all appear to be associated with individual athlete participation.

6.2 Methodological Contributions to the Sport Literature

6.2.1 Multivariate Approach to Understanding Participation

One methodological contribution of this research was the use of a multivariate approach. Rather than following the traditional approach of studying the cohesion-participation relationship with only one dependent variable, Study 1 used canonical correlation analysis to test the relationship of the different facets of cohesion to three different participation outcomes simultaneously. The decision to examine multiple participation outcomes acknowledged that an athlete's involvement with the team could take many forms. While previous research focusing on single outcomes (e.g., Spink, 1995) has been informative, one drawback of having many studies focused on different outcomes is the inability to account for any potential overlap between constructs. By considering them within a single analysis, one can determine whether the outcomes covary in relation to other variables in the model.

6.2.2 Social Network Analysis in Sport Teams

A second methodological contribution of this research was the use of a social network approach in Study 2. Social network analysis techniques may improve our understanding of the intragroup relations of sport teams by offering information about individual attributes (e.g., perceptions) as well as the actual relations between team members (Lusher et al., 2010). For example, in Study 2, perceptions of teammates' effort (descriptive norms) were captured by having athletes nominate individual team members who 'worked as hard as they could'. These peer nominations were then operationalized as a network density score by calculating the proportion of nominations endorsing teammates' effort out of the number of nominations that were possible within each team. As this was a team-level score, it provided information about the social structure of the team (i.e., the extent that effort was a normative behaviour), while simultaneously representing individual members' perceptions about their teammates' effort.

This novel way of assessing descriptive norms differed from previous research with sport teams where individual athletes were asked to make a global team-level assessment of teammates' effort levels (Spink, Crozier, et al., 2013). One strength of the present social-network strategy is that it shifted the focus away from the individual team members as the unit of

analysis to the team as a whole, which was important for trying to represent each team's social context surrounding player effort behaviours (Lusher et al., 2010).

6.2.3 Experimental Vignette Manipulation

A third methodological contribution of this research was the use of an experimental manipulation in Study 3. In contrast to the abundance of correlational results reported in the sport psychology literature, few studies have employed experimental approaches to examine proposed causal effects (Hagger & Chatzisarantis, 2009). The experimental methodology employed in Study 3, which used vignettes describing hypothetical teams to elicit differential responses from participants, provided a strong complement to the previous observational study of intact teams within their real-world sport setting (Study 2). Vignettes can be a powerful strategy for examining causal relationships (Atzmüller & Steiner, 2010). Further, vignettes have been used recently in experimental designs with success to study the influence of group constructs on athletes (Spink et al., 2015). While Studies 2 and 3 are each limited by what the other possesses (i.e., real-world applicability vs. causal inference; Martens, 1979), the fact that the findings were consistent between studies provided convincing initial evidence identifying group social influence factors (cohesion, descriptive norms) are related to individual effort in youth sport.

6.3 Limitations and Future Directions

6.3.1 Generalizability

As the focus of this dissertation was on adolescent athletes, results can only be generalized to the specific age groups that were examined. For example, in the three soccer studies (Studies 1, 2, 4), the majority of participants were young adolescents (13-15 years). In Study 3's experimental examination of youth volleyball players, older adolescents (15-17 years) were specifically targeted to ensure that participants would have the cognitive ability to discern the group constructs described in the vignettes.

Another limitation related to generalizability concerns the higher proportion of female athletes within the present studies. Although there were an approximately equal proportion of male and female soccer teams competing within Saskatoon Youth Soccer leagues at the time of recruitment, and numerous recruitment strategies were used to try to reach a broad range of teams (e.g., coach meetings, email, paper letters, etc.), coaches of the female teams expressed greater interest in being involved in the research. Similarly, although Study 3 was designed for

both male and female university volleyball camps, the last-minute cancellation of the boys' camp meant that only females were available to participate in that investigation.

Finally, as the focus was on soccer and volleyball teams only, the potential influence of cohesion, norms, and social support in other types of sport teams was not necessarily captured by the present series of studies. It is possible that studying team environments with alternative group structures (e.g., integrated vs. independent team sports; Evans et al., 2012) may result in different relationships among the constructs. Although descriptive norms about teammates' effort were positively related to (Study 2), and influenced (Study 3), self-reported effort in this research with team sport athletes, Colman and Carron (2001) found that athletes on individual sport teams may be minimally influenced by team norms. For example, that study reported non-significant relationships between normative perceptions and several different athlete participation outcomes, including practice attendance and perceived exertion (i.e., effort).

Future direction. To expand the generalizability of the current results beyond the samples included in these initial studies, future research is needed with a broader range of adolescent athletes. Specifically, it would be helpful for future research to examine the questions that guided the current set of studies with both male and female athletes across a broader age range (13-18 years) and from a variety of team sport types.

6.3.2 Method Variance

Another limitation concerns the inability to exclude possible sources of common method variance from the observed relationships. Common method biases are quite common in behavioural research (Podsakoff et al., 2003). One contextual issue within the current set of studies that may have inflated the relationships involved having study participants respond to measures for both the independent and dependent variables (i.e., common rater effect). Doing so can increase the risk of covariance artifacts emerging independent of the constructs themselves. This was of particular concern in Study 1, as cross-sectional data emanating almost entirely from a single survey were used.

Future direction. One way to address a common rater effect would be to incorporate ratings from multiple sources. For example, in the case of the cohesion-effort relationship, it might be informative to include effort ratings from three perspectives: the individual athlete, team members, and the coach. Bray and Whaley (2001) used a similar strategy by capturing individual and coach ratings of athletes' expended effort in youth basketball. Thus, future

research may wish to consider how valued participation outcomes could be captured by multiple sources beyond just the individual athlete.

6.3.3 Experimental Evidence

Although experimental manipulation was considered a strength to test the effects of two group constructs (cohesion, descriptive norms) on an individual participation outcome (effort), and provided a test of proof of principle, a caveat is in order. As the hypothetical scenarios portrayed in these vignettes simplified what would typically be complex social relations in the real-world sport setting, it is unclear whether similar results would emerge with actual sport teams. For instance, how an individual responds to a hypothetical scenario may not accurately reflect actual behaviour, as there is a distinction between contemplating how one would intend to behave in an imagined situation and actual performing that behaviour in a real-life context (Fishbein & Ajzen, 2010).

Future direction. To corroborate the current experimental findings in real-world sport, it would be necessary to create intact teams wherein the levels of cohesion and descriptive norms vary. One possible means of manipulating these group constructs is through team building (TB). Although conceptually-derived TB principles have not been studied in youth sport teams, they have demonstrated effectiveness with adolescent exercise groups (Bruner & Spink, 2010, 2011). Future studies may wish to employ Carron and Spink's (1993) established TB protocol (i.e., TB versus control conditions) with real-world sport teams to examine how manipulated levels of cohesion and norms may influence young athletes' participation with the team.

6.4 Conclusion

For decades, researchers have been interested in understanding why youth participate in sport (e.g., Gill et al., 1983; Weiss & Petlichkoff, 1989). While numerous factors may play into a young athlete's sport involvement (e.g., physical competence, personal enjoyment), one area that has received considerable attention is social influence. For instance, studies abound for the potential influence of coaches (Black & Weiss, 1992; Mageau & Vallerand, 2003) and parents (Fredericks & Eccles, 2004) on athletes' participation. Substantially less research has considered how aspects of the sport team itself could be important, which is surprising considering the documented importance of peer relationships during adolescence (Brown & Larson, 2009). Further, of the team research examined, the majority has adopted a motivational climate

perspective (Jõesaar et al., 2012; Keegan, Spray, Harwood, & Lavallee, 2011; Vazou et al., 2005), ignoring specific group properties such as cohesion.

Group dynamics constructs have long been featured in the social psychology literature for their significant influence on individual behaviour (Cartwright, 1951). In fact, one of the most notable illustrations of the power of the group emerged from a study that was conducted with youth and featured sport - the famous Robbers Cave experiment (Sherif, Harvey, White, Hood, & Sherif, 1961). In this classic study, boys who came together as strangers quickly cohered around shared goals, created group structures, and established group norms for behaviour. This study provided strong field evidence of how significantly a group can impact the behaviour of its individual members.

While preliminary, the studies in this dissertation also have begun to demonstrate how selective aspects of the group may relate to and influence the participation of youth sport athletes. Although more research is needed to build upon the current findings, these initial results point to several lines of future investigation that have the potential to further our understanding of team constructs in relation to youth sport participation.

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Appendix A – Coach Letter (Studies 1, 2, 4)



Dear Saskatoon Youth Soccer Coach:

I am a graduate student in the College of Kinesiology at the University of Saskatchewan, under the supervision of Dr. Kevin Spink. As part of my research, I am conducting a study that will examine the effect of team factors (e.g., cohesion) on a number of individual athlete motivational behaviours (e.g., effort levels, attendance at practice).

As I am interested in the effects of the team environment, I am recruiting *teams* in the U14, U16, and U18 divisions that would be interested in participating in this study. Your team's participation would involve having players complete surveys at two different points during the season: survey #1 would occur approximately two weeks into the season (i.e., early/mid May) and survey #2 would occur during the last one or two weeks of the season (i.e., late June). Both surveys would be completed in the team setting, either before or after a regular team practice, and will take about 10 minutes to complete. As the coach, we would ask that you provide us with a team roster at the beginning of the season and keep a record of player attendance at team practices throughout the season (this form would be provided).

The results of this study will benefit the Saskatoon Youth Soccer organization, and its coaches, by providing information about how aspects of the team environment are related to important motivational behaviours, such as how much players attend and how hard they work when they get there. If relationships emerge, coaches could be alerted to the fact that enhancing individual effort and attendance may be as much about managing team factors as it is about motivating individual players. We will provide a summary of study findings directly to Saskatoon Youth Soccer following study completion.

Your players' participation in this study would be completely voluntary, and players will have an opportunity to opt-out if they wish. Parents will be provided with detailed information about the study, and if you would like, I also would be more than happy to attend a team parents' meeting early in this season to answer any additional questions they might have about the study.

I will be in attendance at the Youth Coach Info Night to answer questions and seek your team's participation in this study. If you have additional questions about the study, I can be reached at the phone number or email address provided below.

Sincerely,

Jocelyn Ulvick
Ph.D. Candidate
College of Kinesiology
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Phone: 306-966-1099
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Phone: 306-966-1074
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Appendix B – Parent Letter (Studies 1, 2, 4)



Dear Parent/Guardian(s):

We would like to ask for your son/daughter's assistance with a study that is being carried out by a team of researchers from the College of Kinesiology at the University of Saskatchewan. This study will examine the effect of team factors (e.g., cohesion) on a number of individual athlete behaviours (e.g., effort levels, attendance at practice). The results of this study will benefit the Saskatoon Youth Soccer organization, and its coaches, by providing information about how aspects of the team environment are related to players' attendance at practice and how hard they work in those practices.

If your son/daughter volunteers to participate in this study, he/she will be asked to answer some questions at two different points in the season (early season/late season). These two sessions will be held before or after a regular team practice, and will be arranged in advance through the team coach. Questions will take approximately 10 minutes to complete.

Participation in this study is completely voluntary and presents no anticipated risks. There will be no deception used in this study. Your son/daughter may choose not to respond to any survey questions that he/she does not feel comfortable answering. As well, your child can withdraw from the study up until June 15, 2013 (survey #1) or August 15, 2013 (survey #2). After these dates, it is likely that the results from each respective survey will have been disseminated, and data withdrawal may not be possible.

Results will be presented in aggregate form so that individual participants' identities are not known. Any information that your son/daughter provides on the surveys will be kept confidential by the researchers. Survey data will be stored by Dr. Kevin Spink in a locked office at the University of Saskatchewan for a minimum of five years after the completion of the study. If your son/daughter wishes, he/she may withdraw from the study at any time, for any reason, without penalty, or without causing anyone to be upset. This study has been approved by the Behavioural Research Ethics Board <BEH 13-132>.

If you, or your son/daughter, have any questions or concerns about this study, please do not hesitate to contact Jocelyn Ulvick (966-1099) or Dr. Kevin Spink (966-1074) at any time.

Sincerely,

Jocelyn Ulvick
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Appendix C – Participant Consent Form (Studies 1, 2, 4)

You are invited to participate in a research study involving young athletes. Please read this form carefully and feel free ask any questions now. If you have any questions during the study, please feel free to contact the researcher via email or phone using the information listed below.

Project Title: Examining the role of team factors in adolescent sport participation

Researchers:

Jocelyn D. Ulvick
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Tel: (306) 966-1099
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Dr. Kevin S. Spink
Professor
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Tel: (306) 966-1074
Email: kevin.spink@usask.ca

Purpose: In this study, we are interested in examining your thoughts about various aspects of your sports team environment. We will ask questions about your involvement with the team, as well as your thoughts about the team setting.

Procedure: Your participation will involve completing surveys at two different time points: early in the season and near the end of the season. Surveys will be completed before or after a regular team practice on days that have been organized in advance by your coach. These surveys will take approximately 10 minutes to complete. If you choose to participate, confidentiality is assured, meaning that only the researchers will be able to link your identity to your survey responses.

Potential Benefits: As a participant, you may be making important contributions to the research literature. There are no personal benefits to participating in this study, although the findings from this study will help the Saskatoon Youth Soccer organization and sport researchers further understand how factors related to the team environment are related to youth sport participation.

Potential Risks: Participation in this study presents no anticipated risks.

Storage of Data: Electronic data will be copied to an external drive and will be locked by password in read-only format. Only the researchers will have access to the data. No data will be stored on any computer hard drives once the study is complete. The data will be stored for a minimum of five years after completion of the study. If the researcher chooses to destroy the data after the five years, it will be destroyed beyond recovery. This is standard protocol for any data that may be published in an academic journal or presented at a professional conference.

Confidentiality: Steps will be taken to ensure confidentiality. Although you will be required to provide your name on the surveys in order to match your survey responses across the two time points, only the researchers will have access to this information. When published or presented at

conferences, the data will be reported in a summarized form so that it will not be possible to identify responses from individual participants.

Right to Withdraw: Your participation in this study is voluntary and you will be free to answer only the questions that you are comfortable answering. You may withdraw from the research project for any reason, at any time, without penalty of any sort. If you withdraw from the study before completion, any data that you have contributed will be destroyed.

Questions: If you have any questions concerning the research project, please feel free to contact the researchers at any time using the phone number/email address provided above. This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board on <date pending>. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office (ethics.office@usask.ca or 306-966-2975). Out of town participants may call toll-free (888-966-2975).

Study Results: If you would like a summary of the findings from this study, please email the researchers (kevin.spink@usask.ca).

Consent to Participate:

Your signature below indicates that you have read and understand the description provided.

I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

_____	_____	_____
<i>Name of Participant</i>	<i>Signature</i>	<i>Date</i>
_____	_____	
<i>Researcher's Signature</i>	<i>Date</i>	

A copy of this consent will be left with you and a copy will be taken by the researcher.

Appendix D – Demographic, Cohesion, and Participation Measures (Studies 1, 2, 4)

Name: _____ Age: _____ Circle: Male / Female

Team: _____ Age Group (e.g., U14): _____

1. Number of years playing competitive soccer: _____
2. What is the main overall reason why YOU play competitive soccer? (Circle only one response.)
 - a. To have fun
 - b. To learn new skills
 - c. To improve/maintain my fitness
 - d. To be with friends
 - e. To compete
 - f. Other Please describe: _____

The following questions ask about your **FEELINGS TOWARD YOUR TEAM**. Please circle a number from 1 to 9 to show how much you agree with each of the statements

1. We all share the same commitment to our team's goals.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

2. I invite my teammates to do things with me.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

3. As a team, we are all on the same page.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

4. Some of my best friends are on this team.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

5. I like the way we work together as a team.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

6. I do not get along with the members of my team.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

7. We hang out with one another whenever possible.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

8. As a team, we are united.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

9. I contact my teammates often (phone, text message, internet).

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

10. This team gives me enough opportunities to improve my own performance.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

11. I spend time with my teammates.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

12. Our team does not work well together.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

13. I am going to keep in contact with my teammates after the season ends.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

14. I am happy with my team's level of desire to win.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								STRONGLY AGREE

15. We stick together outside of practice.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

16. My approach to playing is the same as my teammates.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

17. We contact each other often (phone, text message, internet).

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

18. We like the way we work together as a team.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE					STRONGLY AGREE			

The following questions ask about your perceptions about the amount of **EFFORT** you have put forth up to this point in the season. Please circle a number from 1 to 7 to indicate your level of agreement with each of the statements below.

1. When the game is on the line, I devote all my energy to getting the job done.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

2. When playing, I do so with intensity.

1	2	3	4	5	6	7
STRONGLY DISAGREE					STRONGLY AGREE	

3. I work on all aspects of my game during practice.

1	2	3	4	5	6	7
STRONGLY DISAGREE					STRONGLY AGREE	

4. I work as hard as I can to be successful this season.

1	2	3	4	5	6	7
STRONGLY DISAGREE					STRONGLY AGREE	

5. When I play, I exert myself to the fullest.

1	2	3	4	5	6	7
STRONGLY DISAGREE					STRONGLY AGREE	

6. I work as hard in practice as I do in competition.

1	2	3	4	5	6	7
STRONGLY DISAGREE					STRONGLY AGREE	

The following questions ask about your **INTENTION TO RETURN** to playing soccer next season. Please circle a number from 1 to 5 to show how likely you are to return to this team next season.

1. If this league started again next week, how likely would you be to return to playing with this team?

1	2	3	4	5
NOT AT ALL LIKELY (At or near 0% chance)	NOT LIKELY	SO-SO (50-50)	LIKELY (At or near 100% chance)	VERY LIKELY

2. If you had the choice to play on any team next season, how likely are you to return to playing with this team again?

1	2	3	4	5
NOT AT ALL LIKELY (At or near 0% chance)	NOT LIKELY	SO-SO (50-50)	LIKELY (At or near 100% chance)	VERY LIKELY

Appendix E – Template of Peer Nomination Form (Study 2)

The statement listed in the left-hand column of the table below may relate to **CERTAIN PLAYERS ON YOUR TEAM**. Your teammates' names are listed across the top of the table. Place an "✓" in the box if the statement applies to a specific teammate (or teammates). Only select those teammates to whom the statement applies. If the statement does not apply to any of your teammates, check the "N/A" box.

<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
<Player name>	
	These players always work as hard as they could.

Appendix F – Parent Letter (Study 3)



Dear Parent/Guardian(s):

We would like to ask for your son/daughter's assistance with a study that is being carried out by a team of researchers from the College of Kinesiology at the University of Saskatchewan. This study will examine the effect of team factors (e.g., cohesion, team norms) that may impact individual athletes' behaviour. The results of this study will provide information about how aspects of the team environment might influence players' effort in the team setting.

If your son/daughter volunteers to participate in this study, he/she will be asked to read a short description about a volleyball team, and then answer a series of questions related to the team that was described. This 5-minute survey will be conducted during the Huskies Volleyball Camp.

Participation in this study is completely voluntary and presents no anticipated risks. There will be no deception used in this study. Your son/daughter may choose not to respond to any survey questions that he/she does not feel comfortable answering. The surveys will be anonymous, meaning that survey responses will not be able to be linked with participants' identities.

Study results will be presented in aggregate form. Any information that your son/daughter provides on the survey will be kept confidential by the researchers. All data will be stored by Dr. Kevin Spink in a locked office at the University of Saskatchewan for a minimum of five years after the completion of the study. If your son/daughter wishes, he/she may opt not to participate in this study without penalty or without causing anyone to be upset. However, withdrawal after surveys are submitted is not possible, given the anonymous nature of the surveys. The University of Saskatchewan Behavioural Research Ethics Board approved this study on June 25, 2014.

If you, or your son/daughter, have any questions or concerns about this study, please do not hesitate to contact Jocelyn Ulvick (966-1099) or Dr. Kevin Spink (966-1074) at any time.

Sincerely,

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Appendix G – Recruitment Script (Study 3)

My name is Jocelyn Ulvick and I am a graduate student in the College of Kinesiology. We are doing a research study to understand more about the team environment on youth volleyball teams.

Participating in this study involves completing a short 5-minute survey where you will read a short description about a team and then respond to questions related to that team. The description will talk about two things related to a sport team. **One is team cohesion, which means how close or bonded the players on the team are.** The other is player effort, or how hard all the players on the team are working. The team description will specify whether the team is cohesive or not cohesive, and whether a lot of the players on the team work hard or only a few of the players on the team work hard. **It is very important that you read your team description carefully, while imagining yourself playing on a team like this. You will then be asked questions about this team, so try to keep thinking back to the team characteristics as you go through the survey.**

You do not have to write your name on your survey page. Your survey responses are anonymous, meaning that the researchers will not be able to identify which survey is yours.

I will hand out the surveys now. If you are interested in participating, please take a survey to complete. If you are not interested in participating, you can either take a survey to read or doodle on, or you can just sit quietly while the remaining players complete their survey. When you are done, please hand in your survey. The consent form is for you to take home with you.

(THANK YOU FOR YOUR HELP!!)

Appendix H – Team Description Vignettes (Study 3)

High Cohesion/High Norm:

This team is very cohesive. During the present season, the team has gone through numerous situations (including successes and failures) that have drawn the team members together. The players are very close and work well together. They are there for the same reasons and are all on the same page about the goals of the team.

In addition, most players on this team give their maximum effort. **Over 90% of the players on this team work as hard as they can to help the team reach its goals.** In practices, most of the players train with as much intensity as they would have in a game situation. As well, players work to improve all aspects of their game in practice.

High Cohesion/Low Norm:

This team is very cohesive. During the present season, the team has gone through numerous situations (including successes and failures) that have drawn the team members together. The players are very close and work well together. They are there for the same reasons and are all on the same page about the goals of the team.

However, few players on this team give their maximum effort. **Less than 10% of the players on this team work as hard as they can to help the team reach its goals.** In practices, most of the players train at a lower intensity than what they would have in a game situation. As well, players only work to improve certain aspects of their game in practice.

Low Cohesion/High Norm:

Most players on this team give their maximum effort. **Over 90% of the players on this team work as hard as they can to help the team reach its goals.** In practices, most of the players train with as much intensity as they would have in a game situation. As well, players work to improve on all aspects of their game in practice.

However, **this team is not very cohesive.** During the present season, the team has gone through numerous situations (including successes and failures), but these situations have not drawn the team members together. The players have not gotten to know each other and often don't work well together. They are there for different reasons and are not all on the same page about the goals of the team.

Low Cohesion/Low Norm:

Few players on this team give their maximum effort. **Less than 10% of the players on this team work as hard as they can to help the team reach its goals.** In practices, most of the players train at a lower intensity than what they would have in a game situation. As well, players only work to improve certain aspects of their game in practice.

In addition, **this team is not very cohesive**. During the present season, the team has gone through numerous situations (including successes and failures) that have not drawn the team members together. The players have not gotten to know each other and often don't work well together. They are there for different reasons and are not all on the same page about the goals of the team.

Appendix I – Participant Survey (Study 3)

Group Environment in Volleyball Teams

What is your age? ____ years

Are you: Female / Male (*please circle*)

How many years have you played volleyball? _____ years

What is the highest level of volleyball that you have played?

(*check the ONE that best applies*)

- ☐ Intramural (I competed against teams within my school.)
- ☐ High school (I competed against other schools.)
- ☐ Club (I competed against other city teams within or outside of Saskatoon.)
- ☐ Provincial (I played for “Team Sask”, or for other provincial team in Canada.)
- ☐ Other

The paragraphs below use two characteristics, **team cohesion** and **how hard players work (effort)**, to describe a hypothetical volleyball team. Cohesion refers to how *close* and *bonded* players on a team feel they are with their teammates.

Imagine that you are a member of this hypothetical team while you read about this team, and then respond to the questions that follow on the back of this page.

PLEASE READ CAREFULLY:

This team is very cohesive. During the present season, the team has gone through numerous situations (including successes and failures) that have drawn the team members together. The players are very close and work well together. They are there for the same reasons and are all on the same page about the goals of the team.

In addition, most players on this team give their maximum effort. **Over 90% of the players on this team work as hard as they can to help the team reach its goals.** In practices, most of the players train with as much intensity as they would have in a game situation. As well, players work to improve all aspects of their game in practice.

Based on the **degree of team cohesion** as well as the **effort levels given by players** on the team described, answer the following questions about **how hard YOU would work** if you were a member of this team.

1. If the game were on the line, I would devote all my energy to getting the job done.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

2. When playing, I would do so with intensity.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

3. I would work on all aspects of my game during practice.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

4. I would work as hard as I could to be successful.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

5. When I play, I would exert myself to the fullest.

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

6. I would work as hard in practice as I do in competition.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

Now, think back to the team description you read...

7. Based on the characteristics provided, to what extent were you able to imagine the team that was described?

1	2	3	4	5	6	7
NOT AT ALL						VERY MUCH SO

8. What was the degree of cohesiveness of the team that was described?

- ☐ Very cohesive
- ☐ Not very cohesive

9. What was the effort level of the players on the team that was described?

- ☐ Over 90% of players worked hard
- ☐ Less than 10% of players worked hard

Thank you for your participation in this study!!

Appendix J – Social Support Measure (Study 4)

The following questions ask about your **CURRENT RELATIONSHIPS WITH THE OTHER PLAYERS ON YOUR TEAM**. Please circle a number from 1 to 7 to show your agreement with each of the statements below.

- 1. There are players on this team I can depend on to help me if I really needed it.**

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

- 2. There are players on this team who enjoyed the same social activities I do.**

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

- 3. Other players on this team view me as skilled.**

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

- 4. On this team, I feel part of a group of players who share my attitudes and beliefs.**

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

- 5. I think other players on this team respect my skills and abilities.**

1	2	3	4	5	6	7
STRONGLY DISAGREE			STRONGLY AGREE			

6. If something went wrong, players on this team would come to my assistance.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

7. Players on this team recognize my ability and skills.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

8. There are players on this team who shared my interests and concerns.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

9. There are players on this team I can depend on for aid if I really needed it.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

10. There are players on this team who admire my talents and abilities.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

11. There are players on this team who like to do the things I do.

1	2	3	4	5	6	7
STRONGLY DISAGREE						STRONGLY AGREE

12. There are players on this team I could count on when things go wrong.

1

2

3

4

STRONGLY
DISAGREE

STRONGLY
AGREE